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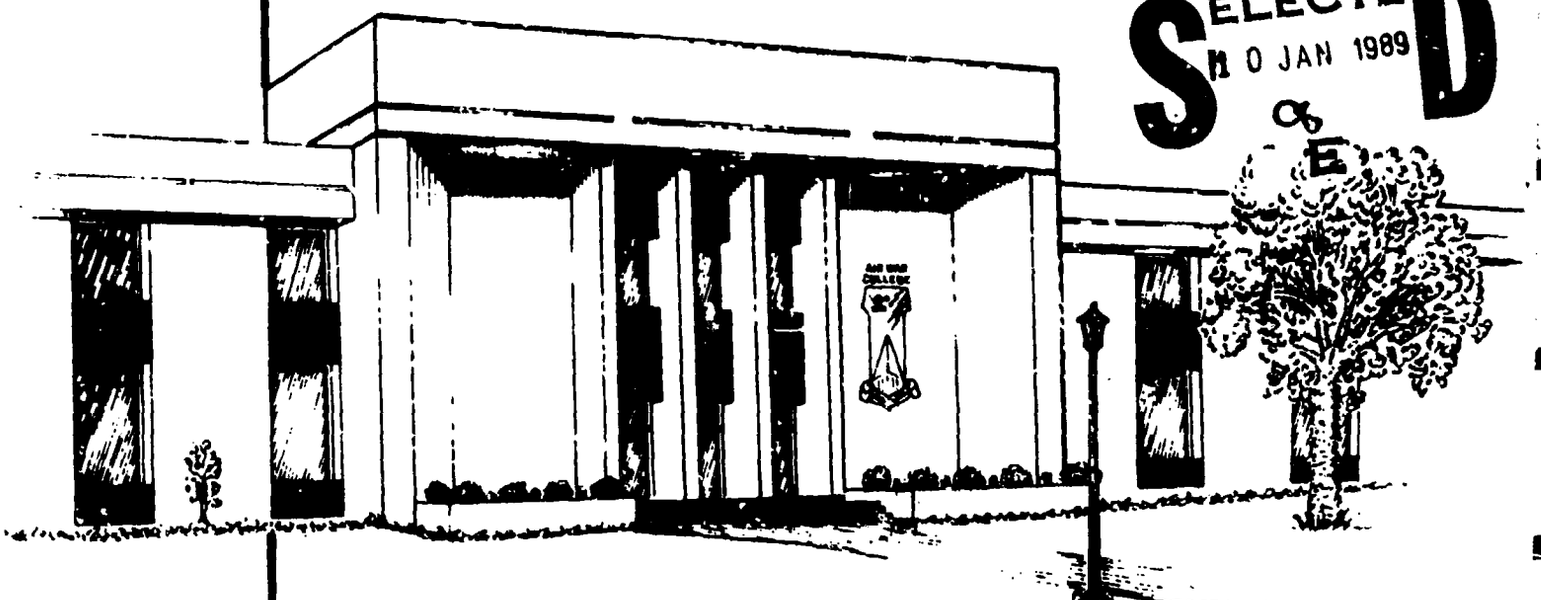
COMMAND AND CONTROL AND COMMUNICATIONS LESSONS LEARNED: IRANIAN RESCUE, FALKLANDS CONFLICT, GRENADA INVASION, LIBYA RAID

By COLONEL STEPHEN E. ANNO
AND
LIEUTENANT COLONEL WILLIAM E. EINSPAHR



AIR UNIVERSITY
UNITED STATES AIR FORCE
MAXWELL AIR FORCE BASE, ALABAMA

AIR WAR COLLEGE
AIR UNIVERSITY

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by

Stephen E. Anno
Colonel, USAF

William E. Einspahr
Lieutenant Colonel, USAF

A RESEARCH REPORT SUBMITTED TO THE FACULTY

IN

FULFILLMENT OF THE RESEARCH

REQUIREMENT

Research Advisor: Major Charles E. Zimmer Jr.

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AIR WAR COLLEGE RESEARCH REPORT ABSTRACT

TITLE: Command and Control and Communications Lessons Learned:
Iranian Rescue, Falklands Conflict, Grenada Invasion, Libya Raid.

AUTHORS: Stephen E. Anno, Colonel, USAF, and
William E. Einspahr, Lt Col, USAF

Over the past decade, four separate and distinct significant military actions were conducted by the United States: the Iran hostage rescue attempt, the Falklands conflict, the Grenada invasion, and the Libya raid. In each case, a post-action analysis was performed to identify "lessons learned". This paper reviews the four operations, identifies the lessons, and then assesses the claim that the United States military establishment has learned from them. The focus of the analysis on is command, control, and communications. Specifically, it provides a brief summary of the actual operation, describes the C³ structure used, and highlights the lessons learned. It clearly points out that essentially the same lessons continue to occur in each operation. As a result, it concludes that the military does not do a very good job of institutionalizing or transferring the experiences gained from one operation to subsequent operations. Recommendations are not included, but the implication is that there is an urgent need to institutionalize military experiences and lessons so the same mistakes are not consistently repeated.

BIOGRAPHICAL SKETCH

Colonel Stephen E. Anno was born in Southern California in 1944. He graduated from high school in 1962, attended the University of California at Los Angeles (UCLA), and in 1966, graduated with a BA in Political Science. He joined the Air Force in 1967, and after graduating from OTS, attended communications technical school training at Kessler AFB. After technical school, he was assigned to Luke AFB where he was the communications operations officer. From Luke, he went to a variety of assignments which included a communications Engineering and Installation squadron in Southeast Asia, the Pacific Communications Area in Hawaii as part of the PACAF staff, where he also received his Masters Degree from Pepperdine University in Business Administration, next he assigned to HQ Electronic Security Command as a plans staff officer, and then to the Leadership and Management Development Center (LMDC) at Maxwell AFB as a management consultant. From Alabama, Col Anno went to Ankara, Turkey as a Communication Squadron Commander, and from there to Air Force Communications Command (AFCC) Headquarters at Scott AFB in 1982, where he became the Assistant Chief of Staff. In 1985, he returned overseas to a NATO assignment as Deputy Chief of the Communications Division for the Southern Region's air component command, AIRSOUTH, located in Naples, Italy. Col Anno is married to the former Margaret L. Hammond (Lise), and is a graduate of the Air War College class of 1988.

BIOGRAPHICAL SKETCH

Lieutenant Colonel William E. Einspahr was born in Iowa in 1945 and graduated from high school in 1963. He holds a bachelor's degree from Iowa State University and a master's degree from Webster University earned in 1967 and 1977 respectively. After completing Officer Training School in 1968, Colonel Einspahr entered active duty as an air traffic control operations officer. For the next nine years, he performed a variety of jobs in the air traffic control career field at six duty locations. In 1977, Colonel Einspahr cross-trained into the communications-electronics career field where his first assignment was as chief of maintenance of the 1877 Communications Squadron, Holloman AFB, NM. After a tour of duty with Hughes Aircraft Company under the Air Force Institute of Technology Education With Industry Program, he was assigned to Headquarters Air Force Communications Command. In 1983, Colonel Einspahr assumed Command of the 2192d Communications Squadron, Loring AFB, ME. Prior to attending Air War College, he was the Deputy Commander of the 1843 Engineering Installation Group, Wheeler AFB, HI. Colonel Einspahr is married to the former Rosella Konradi. They have two daughters: Heidi and Kim. Lieutenant Colonel Einspahr is a graduate of the Air War College class of 1988.

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CHAPTER I

INTRODUCTION

With the development of weapons of mass destruction, modern warfare has taken in a different dimension. General war, such as that experienced in World War I and World War II, is no longer thinkable. Nuclear weapons and their sophisticated delivery systems have created a stalemate between the major powers of the world. Fighting a nuclear war to victory while holding damage and destruction of one's homeland to acceptable limits is not considered to be possible. The threat of mutual annihilation, however, has not kept nations and peoples from conflict. Changed has been the practice of warfare. General warfare has been replaced by limited wars and low-intensity conflict. Revolution, civil war, insurgency, proxy warfare, and terrorism now dominate. These forms of warfare are now the most likely threats to U.S. interests and those of its allies. Evidence of that fact can be seen that in the last 40+ years the United States has been involved in no general wars; however, there have been numerous occasions for U.S. involvement in limited or low-intensity conflicts. Korea and Vietnam are most prominent, but there have been others.

This report looks at the command, control, and communications (C3) aspects of four recent low-intensity, limited warfare military operations, three involving U.S forces and the third, the forces of the United Kingdom. From this review will be generated a series of lessons

learned for application in future conflicts of a similar nature as well as an assessment of how well the U.S. C3 community has adjusted to short-notice, low-intensity operations and has learned (or not learned) from past successes and failures.

Starting this review of command, control, and communications in contemporary military operations Chapter II will look at the U.S. attempt to rescue American hostages in Iran. Chapter III will review the British experience in retaking the Falklands from Argentina. Chapter IV will look at the U.S. invasion of Grenada, and Chapter V will analyze the U.S. raid on Libya. Each of these four chapters will briefly summarize the military operation which took place, describe the command and control and communications arrangements used, and identify the lessons learned for that operation. Chapter VI will offer a collective view of the common or enduring lessons learned from all four military operations, and Chapter VII will provide a concluding assessment of how effectively the individual lessons were learned and transferred to the next operation. While no specific recommendations will be offered at the conclusion of the report, the lessons learned are in themselves recommendations which are fully explained and capable of implementation.

CHAPTER II

THE IRANIAN HOSTAGE RESCUE ATTEMPT

On the night of 24 April 1980, under code name Operation Eagle Claw, the United States launched forces toward Iran as the first step of a plan to rescue 53 American hostages being held in Teheran by militant Iranian students. President Carter had resorted to the use of military force only after over six months of intense diplomatic negotiations and attempted sanctions had proven ineffective. The operation was complex and high risk. "People and equipment were called on to perform at the upper limits of human capacity and equipment capability."[1]

The size of the force continually multiplied. A once relatively small rescue force of about 70 commandos from the Army unit called Delta Force had grown to well over 120. In addition to the actual assault team, there was an Army Ranger team of 12 people who would establish site security at a landing spot in Iran; there were 13 additional Rangers who would later secure an airfield to be used for the actual escape; there was a group of 12 Army antiaircraft experts; 11 Farsi speaking truck drivers; plus a Combat Control Team; the pilots and crews of Air force C-130s and Navy helicopters; and even some Iranian officers.[2] In all, there were nearly 200 hundred people sent to rescue the 53 hostages. The number was large, but not excessive given what they had to do.

At about 1800 hours, the first of three MC-130 Combat Talon special operations configured troop-carrying aircraft launched from the island of Masirah off the coast of Oman. They were followed almost immediately by three EC-130s which were configured for ground refueling support.[3] When the aircraft were about halfway to their destination, eight Navy RH-53D Sea Stallion helicopters (flown by Marine pilots) took off from the aircraft carrier USS Nimitz located in the Gulf of Oman off the south coast of Iran. The rendezvous between the C-130s and the choppers was at a point in Iran's Dasht-e-Kavir desert referred to in the rescue plan as "Desert One," located some 265 nautical miles southeast of Teheran.

According to the plan, the helicopters were to fly the 600 miles to Desert One, and still under cover of darkness refuel from the C-130 tankers, load the 120 man army assault team and proceed to two additional hide sites -- one for the assault team members, and one for the helicopters. The C-130s would return to Masirah. By the time the choppers had reached the second hide sites, it was expected to be daylight and any further action would have to wait for darkness.

This phase of Eagle Claw -- the blacked out, low level, radio silent ingress of the C-130s and choppers, the short take-off/landing (STOL) at night on soft desert sand, the night refueling operation, securing the area and transferring the assault team from the C-130s to the helicopters deep within a hostile a country -- was the easy part of the mission!

From the second hide sites, the assault force was to eventually link up with DOD agents who had been inserted into Teheran several days before. After a series up covert maneuvers, six Mercedes trucks and two smaller vehicles, which had been prepositioned in warehouses on the outskirts of Teheran, would be picked up and driven into the city. Using a variety of approaches, the team would then assault the 27-acre US Embassy compound and rescue the hostages. The team expected to encounter anywhere from 70 to 125 people in the compound not including the hostages. "Twenty to 25 would be guards on duty, the others sleeping in barracks."[4] The only "real threat" was considered to be the guards actually holding the hostages. It should be noted however, that at the time of mission launch the rescue force did not know specifically which of the 14 buildings in the compound held the hostages.

Meanwhile, the helicopters would orbit in an area north of the city awaiting the signal that the tactical assault had been successful. The choppers were then to extract the team and the hostages by landing in the vicinity of the Embassy, or nearby in the Anjadieh soccer stadium if the compound were inaccessible. The helicopters would then fly 35 miles south to Manzariyeh airfield which would have been seized earlier by US Army rangers. There, the assault team and hostages would board waiting USAF C-141 transport aircraft and fly out to friendly territory.

Casualties for the entire operation were expected to be "six or seven Delta people" wounded, and "a chance that two

or three hostages could be injured."[5] No one will ever know if the actual rescue would have worked. The mission was aborted at the Desert One site -- 0230 local Iran time.

It had been determined early in the operational planning stages that due to weight and lift capacities a minimum of six helicopters would be required to carry out the actual rescue. Of the eight that left the Nimitz, two never reached the Desert One site, and one of the remaining six that did was not operational due to a hydraulic failure which could not be repaired. Discussion throughout the mission's chain of command reaffirmed that less than six operational choppers precluded continuing the mission.

It was during the evacuation of Desert One that disaster struck. In the process of maneuvering, one of the helicopters collided with its C-130 refueler. The subsequent explosion produced flames 300-400 feet into the night.[6] Ammunition then started to explode and created further confusion. Eventually, the remaining C-130s were loaded and took off leaving Desert One to a busload of Iranian workers who had been detained while securing the area. As the heavily loaded aircraft rose from the sand, the flames from the burning chopper and C-130 illuminated the five intact helicopters on the desert floor. In the shambles that remained behind was an estimated 193 million dollars worth of effort and equipment,[7] an extensive array of classified photographs and documents, eight dead servicemen, and a great deal of the US military's professional reputation.

The failure of the mission has been attributed to a variety of causes. However, two consistently identified key faults are: 1) a weak command and control structure and 2) communications.

Command and Control

The post mortem investigation team headed by Admiral James L. Holloway, III (US Navy retired) concluded that command and control was one of 23 significant issues which "troubled" his team "professionally about the mission -- areas in which there appeared to be weaknesses."[9] The final report specifically states that command and control was excellent at the upper echelons, but became more "tenuous and fragile" at the intermediate levels. Command relationships below the commander Joint Task Force (JTF) were not clearly emphasized in some cases and "were susceptible to misunderstanding under pressure."[9]

Shortly after the decision was made to rescue the hostages by military action, General Edward Meyer, Army Chief of Staff, nominated MG James B. Vaught, USA, to lead the task force.[10] He was confirmed on 12 November 1979. However, the Joint Chiefs of Staff (JCS) by then apparently had made a conscious decision not to use the existing JTF structure.[11] Their concern was that security was paramount and use of the JCS Crisis Action System (CAS) procedures would involve too many people to protect secrecy. This fundamental decision forced MG Vaught to create an entire ad hoc organization.

Over the months that followed, November 1979, to April 1980, operational and training requirements fluctuated as the rescue plan was developed and revised. The chain of command also evolved. Initially, MG Vaught had no deputy. He worked directly with Col Charlie A. Beckwith, USA, Commander of the Delta Force assault team who would perform the main rescue action; and with Col James Kyle, USAF, who was in charge of the C-130 pilots and aircrew training. Later, Col Charles H. Pittman, USMC, was ordered to "become involved in the planning and execution of the helicopter phase " of the operation.[8] Although Col Pittman was never formally assigned to the task force, by mid January 1980, he had in effect established himself as the helicopter force leader. The situation was further confused when later, LTC Edward R. Seiffert, USMC, was designated as the helicopter flight leader. Unfortunately, these command relationships remained confused and unclarified during the majority of preparation time for the rescue. (NOTE: During the actual operation, Col Pittman was indeed the Deputy Commander for helicopters and reported directly to the Commander JTF. LTC Seiffert reported to Col Pittman. This chain was clearly understood by all concerned.)[9] Compounding the above, was the introduction of MG Philip C. Gast, USAF, to the chain of command, as a special consultant for the task force. He had been to Teheran and it was thought his expertise could assist the planners. MG Gast was promoted to the rank of LtGen on 1 April 1980, and subsequently was appointed as Deputy Commander of the task force even though he

out ranked the commander. Apparently, MG Vaught never formally spelled out the command structure from himself downward.[14] Certainly, mid-level command relationships were too informal and not clearly defined or emphasized, and in some cases only implied. This structure hampered the training and planning necessary to attain the required mission capability and proficiency.

Unfortunately the command and control arrangements used to execute the actual operation were also flawed. At no time during the nearly six months of training and preparation, or during the operation itself was there a single mission commander designated. There was MG Vaught, with overall control, but he was in Egypt nearly 1000 miles away from the action; there was Maj Fitch, the site security force commander; there was LTC Seiffert, the helicopter force commander (flight leader); there was Col Kyle, the C-130 and landing-zone support commander; and there was Col Beckwith, the ground forces commander. But, there was no individual deployed with the force who was responsible to integrate and coordinate the efforts of all these elements.[15]

Operational control arrangements for Eagle Claw were convoluted as well. Col Kyle was the landing zone commander, but Col Beckwith was reported to be the only person on site with go/no go decision authority for the mission. Complicating Beckwith's "authority" was the extensive up-channel reporting and monitoring network. This network included at least the Nimitz, an E-3 AWACS, Commander JTF in

Egypt, the Pentagon, and the White House. Despite the clearly established criteria (six operational helicopters), Col Beckwith felt obligated to discuss and obtain permission from "higher authority" before he aborted the mission. In fact, MG Vaught even asked him to reconsider whether the mission could proceed with only five choppers.[16] Later, it also surfaced that representatives in the White House had briefly considered recommending to President Carter that the mission be ordered to continue.[17] In effect, nearly the whole chain of command was involved in operational control.

The command and control structure was a bureaucratic nightmare, and clearly contributed to the confusion and ineffectiveness of Eagle Claw. For example, some of the helicopter pilots said they didn't know or recognize the authority of those giving orders at Desert One.[18] These pilots therefore logically questioned the orders to abort the mission and abandon their helicopters. Neither did a C-130 loadmaster recognize the individual who first advised him of the abort order.[19] Further confusion about "who was in charge" was probably created when Col Beckwith personally went from one C-130 crew to another yelling at them to not "take-off on their own initiative" until the Delta Force was loaded.[20] It is easy to imagine the turmoil and confusion present when multiple commanders were all yelling orders while C-130 and helicopter engines were running and an aircraft burned alongside.

The Holloway review panel described the basic command and control structure used during preparation for the operation:

> Training was planned and conducted on a highly decentralized basis within an informal component command structure that does not appear to have been clearly established ... COMJTF decentralized command supervision of training and evaluation, in part through the use of various advisors individually observing segments of the continuously evolving concept and plans.[1]

Col Beckwith would describe the command and control arrangements a little differently, but the point remains the same:

> If Coach Bear Bryant at the University of Alabama put his quarterback in Virginia, his backfield in North Carolina, and his defense in Texas, and then got Delta Airlines to pick them up and fly them to Birmingham on game day, he wouldn't have his winning record...In Iran we had an ad hoc affair. We went out, found bits and pieces, people and equipment, brought them together occasionally and then asked them to perform, but they didn't necessarily perform as a team.[2]

The effect on mission capability, readiness, and execution was devastating.

The communications support for Eagle Claw was extensive. It started early, with the initial decision to attempt a rescue, and continued as a crucial element throughout the mission, and the decision to abort. Yet like command and control, major aspects of the communications arrangements were flawed. In fact, it could be argued that the lack of a communications capability was directly responsible for the mission abort.

Communications

In the initial stages of planning, a secure training site called Camp Smokey was located for the Delta Force team. One of the first actions taken was to install and provide secure telephone and message communications to this site.[13] The Code name for the planning phase of the rescue operation was "Rice Bowl." During this stage, mostly fixed, existing communication capabilities were employed. However, the groundwork was laid for substantial capability during the actual rescue.

Satellite communication (SATCOM) systems were used extensively to interconnect the geographically widely dispersed chain of command, and link it to the operational elements. MG Vaught was to direct the complex operation from his command post in Wade Kena Egypt. SATCOM would connect him with his operational commanders, the naval forces aboard the Nimitz in the Indian Ocean, and simultaneously provide direct realtime access to the Pentagon and the White House. A clue as to how effectively this communications network allowed Washington to follow events in the desert is provided by a Pentagon description of the chronology of 24 April:

> At 200 p.m., EST (11:30 p.m. in Iran), the Pentagon is told that the first C-130 has arrived at Desert-1; an hour later, word is sent that one of the mission's eight RH-53D helicopters has returned to the carrier Nimitz in the Arabian Sea; at 4:10 p.m. (1:40 a.m. at Desert-1) word is passed that four of the helicopters have been refueled; at about 4:45 p.m. (2:15 a.m.) the President is told that because of helicopter malfunctions the mission may have to be aborted; about 15 minutes later Carter tells Defense Secretary Harold Brown to cancel the mission; at 5:48 p.m. (3:18 a.m.), Washington is told that one of the helicopters has collided with a C-130; at about 6:30 p.m.

(4:00 a.m. at Desert-1), Washington is told that the last C-130 has taken off.[24]

Supplementing the SATCOM system throughout the raid was also the E-3 AWACS which could function as an airborne command and control and communications/relay platform. The combination of these capabilities allowed such things as the Nimitz bridge officer to pick up a scrambler phone and advise MG Vaught 300 miles away in Egypt that the helicopters had launched, and "operation Eagle Claw...was underway as scheduled at five minutes past seven local time."[25] Simultaneously, this message was received by Col Kyle aboard his C-130 which was halfway to Desert One.[26]

While vertical communications were highly effective up and down the chain of command, internal and lateral communications among the deployed field elements were limited and inadequate. Causes of the communications problems were two-fold: equipment incompatibilities, and procedural constraints imposed by operations security (OPSEC) considerations.

Surprisingly, the Army Ranger forces who were to secure the Desert One site perimeter had radios which could not talk to the Delta or Air Force pilots.[27] When a busload of Iranian nationals, and later two other vehicles, showed up on the scene at Desert One, the status of some combat action could not be passed to Col Kyle and Col Beckwith on a timely basis. Even more importantly, Desert One was unable to talk directly to the helicopter force. Compounding that problem

was the absolute strict adherence to radio silence among the helicopter pilots throughout their 600 mile route and even into an incredible desert sandstorm.

When the helicopter formation was disrupted and disoriented by the intense sandstorm, one chopper aborted because of an indicated blade failure, two others (including the lead chopper) turned to exit the dust and landed. The leader radioed COMJTF in Egypt for guidance. He could not directly call the Desert One site. MG Vaught directed the leader to proceed to the site. Unfortunately, none of the other helicopter pilots could overhear this conversation. As a result, the other pilot, who was out of visual contact, made the decision based on instrument malfunctions and visibility conditions to return to the Nimitz.[8] He did not inform the flight leader of his decision to abort. His particular aircraft also carried all the spare parts for any maintenance or repair needed by the helicopter force.

During this entire time, the force at Desert One was unable to follow the status of events, or advise the pilots that conditions at the landing site were clear. While the one helicopter returned to base, the remaining six grimly navigated through the dust and dirt. About 100 miles from Desert One, they broke into the clear -- eventually arriving anywhere from 50 - 85 minutes behind schedule. Tragically, only five of the six helicopters would arrived operational. Without spare parts, any repair was impossible, and abort of the rescue mission became inevitable.

The pilot who returned later indicated he would have continued the mission if he had known it was clear at the site.[29] The addition of this one helicopter would have been enough to permit the rescue to continue. Or, the damaged helicopter which had made it to Desert One might have been repaired using the spare parts which would then have been available. The Holloway panel concluded that strict radio silence inhibited exchange of essential information within the helicopter flight when unexpected contingencies arose. This radio silence procedure, combined with the lack of a direct communication link between the desert site and the helicopter flight, directly resulted in a lack of adequate resources for the mission. Whether the overall mission possibly could have succeeded given six operational helicopters will always remain a matter of speculation. Admiral Holloway estimated a 60-70% chance of success.[30] Others gave it much less.

Lessons Learned

Eagle Claw has been described as many things: a disaster in the desert by some, a "Debacle in the Desert," by Time magazine, and other things by other people. Clearly, the mission failed, but important new lessons were learned, and other older ones were re-emphasized.

First, unity of command is truly a fundamental principle of war. A clear, well-integrated andwell-understood chain of command is essential to mission success and efficiency, especially under the pressures of unexpected

events, and contingencies of combat. The Eagle Claw composite forces were gathered ad hoc and piecemeal from a variety of services. This certainly could have been done better. "In joint training and evaluation, units from [the] different Service components could have been integrated with greater frequency and for longer periods..."[31] This would have led to more effective command and control and enhanced overall JTF readiness. The Marine helicopter pilots appeared particularly impacted by the weak chain of command. Unlike the C-130 crews, the Marines were not assigned as a unit, but merely formed a pool of individual pilots. The C-130 crews were from the 8th Special Operations Squadron and were assigned to the JTF as an entity complete with aircraft, staff, and maintenance.[32] As one of the USAF pilots said, this arrangement gave them a distinct advantage. "[They] personally knew the on-scene commander and his key agents. Their voices were easily recognizable...over the radio."[33] The Delta Force assault team was also assigned as a unit. It is clear why these organizations were the only elements within the JTF to function internally as a cohesive team: unity of command. The JCS decision not to use the existing JTF process and structure had a devastating result.

Second, planning and training were hampered by not using the JCS CAS. The JCS often found themselves functioning as high ranking staff action officers developing and evaluating their own plan without benefit of an independent review group.

Third, the requirement to keep higher echelons of command informed is confirmed as essential. However, the idea of using these echelons to relay information cannot be substituted for the lateral and horizontal communications connectivity among all elements of the task force. The lack of direct communications among the helicopter force and to the Desert One site was the critical component in the mission failure.

Fourth, communications technology can provide the means to control an operation thousands of miles away from the action. While such connectivity might be essential for reporting, it is incumbent upon the authorities at these distant locations not to insert themselves into the tactical decision process. The on-site commanders require autonomy. Definitive guidance and decision criteria must be clearly established before an operation is underway. Beyond that, authorities must rely on their ability to select the right man for the job; one who is also capable of initiative and the competence to make the right decision.

Fifth, and closely related to four, is the need to insure the mission commander feels confident enough to make fundamental mission go/no go decisions. President Carter had repeatedly stated that Col Beckwith had total decision authority during the mission. In addition, firm abort criteria had been established. Despite this, Col Beckwith apparently felt obligated to consult further with the chain of command before making the final decision.

Sixth, Joint exercises need to be more frequent and realistic. More extensive training would have quickly pointed out the gaps in intraforce communications connectivity. The lack of an integrated command and control structure in all probability contributed to and compounded the communications deficiencies. Since each element of the rescue force worked and trained essentially amongst themselves, and interfaced with one another only at the direct point of operational contact identified during the planning, it's not surprising that there were unanticipated gaps in the communications connectivity between the separate elements of the mission.

Seventh, there needs to be a balance between the emphasis on operational security (OPSEC) and effective communications. Throughout the planning and execution stages of Eagle Claw, every aspect of the operation, every procedure and every decision was based almost exclusively on OPSEC considerations -- to the point of sacrificing mission effectiveness.[34] The ability to communicate, be it face-to-face or over a thousand miles of satellite links, is crucial to planning and executing missions -- especially those as complex as Eagle Claw. Security considerations should not so completely stifle effective communications that the mission being created is doomed to failure before it begins -- because of overprotection.

CHAPTER III

THE FALKLANDS CONFLICT

Carrying on the historic dispute for ownership and control of the Falklands Islands, Argentina, on 2 April 1982, invaded and captured this lightly defended South Atlantic archipelago, resting control from Great Britain for the first time since 1833. One day later, Argentina also seized South Georgia Island from British control.[1]

British reaction was immediate. After three days of intense diplomatic activity aimed at the peaceful return of British control over the disputed territory, the British aircraft carriers HMS Hermes and HMS Invincible left the United Kingdom and were joined by destroyers, frigates, submarines, and support vessels until the fleet numbered sixty. Joining the fleet were support ships drawn from the Royal Fleet Auxillary Service and British registry ships taken up from trade. In the end, a task force of 28,000 men and 100 ships were assembled, the largest British armada since World War II. As the fleet moved south, reconnaissance aircraft, bombers, and air refueling aircraft were flown to Ascension Island, a British held colony some 3,500 miles from the Falklands, but within air refueling range for combat air operations. Ascension Island became the forward operating base for the Royal Air Force. From there, over 5,800 people and 6,600 tons of stores were deployed, and more than 600 sorties were flown.[2]

With military forces under way, the United Kingdom first attempted to blockade the Falklands. On 12 April 1982, the British imposed a maritime exclusion zone of 200 miles around the Falklands. On 23 April, the British warned Argentina that any approach by an Argentine warship or military aircraft which would pose a threat to the task force would be dealt with appropriately. Finally, on 30 April, a total exclusion zone was put in effect to preclude reinforcement by air. Acting simultaneous with their blockade, some 800 miles away, British forces recaptured the lightly defended island of South Georgia.[3]

Military action to recapture the Falklands began in earnest on 1 May 1982 when the British bombed and attacked by air the Port Stanley airport and the Goose Green airstrip, both of which were being used by the Argentine Air Force. Heavy fighting also began at sea. On 2 May, the Argentine heavy cruiser General Belgrano was attacked and sunk by the British submarine HMS Conqueror. Two days later the HMS Sheffield was attacked by a flight of Argentine aircraft and sunk by a French built exocet missile. On 12 May, the Argentines launched a three-wave air strike against the task force, but the British successfully fended them off. On 14 May, British commandos raided the airstrip at Pebble Island, destroying eleven Argentine aircraft on the ground. Finally, throughout this period, the British continued to make bombing runs and air attacks on the airfields, military installations, and ammunition dumps on

the Falklands in an attempt to soften the opposition in preparation for an invasion.[4] By mid-May, the British had successfully accomplished two main objectives in preparation for the invasion of the Falklands Islands: movement of sufficient troops to the South Atlantic and control of the seas around the islands.[5]

The invasion began on 20 May 1982 at Port San Carlos on East Falkland, the ultimate objective being to move forward and retake Port Stanley. Moving under the cover of an overcast sky and poor visibility, and maintaining radio silence, 5,000 British soldiers landed safely on four beaches and quickly overcame the small Argentine opposition. As weather cleared the next day and until bad weather set in again on 26 May, the Argentine Air Force repeatedly attacked the invasion force, sinking or damaging numerous British ships and delaying or disrupting operations. In return, the Argentines paid dearly for their gains through heavy losses of aircraft and pilots. By the end of the invasion operation at San Carlos and the subsequent capture of the Argentine garrison and airfields at Darwin and Goose Green on 28-29 May, the Argentines had almost no combat aircraft left on the islands and could not sustain a lengthy air operation from the mainland of Argentina some 400 miles away. The battle of San Carlos and the air battle for the Falklands had been won.[6] Port Stanley was the next and final objective.

As reinforcements arrived, the British started their overland movement toward Port Stanley, securing key locations in their advance. When it was reported by a farmer that the Argentines had left Fitzroy, it was quickly decided to secure that area and establish a second beachhead. During the landing operation at Bluff Cove near Fitzroy, British forces sustained two surprise attacks by Argentine planes causing the worst day for British casualties in the Falklands war. Despite this setback, British forces were readied and began their main assault of Port Stanley on the night of 11/12 June. With the city surrounded and the enemy at the point of defeat, the British halted their advance at the edge of Port Stanley and ceased firing so as to avoid collateral damage to private property or death to the civilian population. On 14 June, Argentine forces surrendered.[7]

In review of British operations to recapture the Falklands, during a seven week period they assembled a task force of 28,000 men and over 100 ships, sailed 8,000 miles, neutralize the Argentine Navy, fought off a force of numerically superior combat aircraft, put 10,000 men ashore under heavy attack, fought several pitched battles, and brought the Argentines to surrender in three and one half weeks. British casualties included 255 dead or missing and 777 wounded. The Argentines suffered approximately 1,200 killed and 100 wounded.[8]

Command and control of this most successful operation will be discussed next.

Command and Control

The command and control structure which was employed by the British is seen as one of the key ingredients of their success in the Falklands Conflict. At the highest levels of government was a small group of ministers which was chaired by the Prime Minister and met almost daily to coordinate the political, economic and military elements of the crisis. Known officially as the South Atlantic subcommittee of the cabinet's Overseas Defence Committee and unofficially as the Inner Cabinet, this group made policy and strategic decisions for the Falklands campaign with the military advise of the Chief of the Defence Staff, Admiral of the Fleet Sir Terence Lewin. Of particular note, was the fact that the Inner Cabinet only issued guidelines within which commanders were to conduct operations. No attempt was made to centrally control the battle from the center of government some 8,000 miles away.[9] The only restraints imposed were that commanders were to keep casualties to a minimum; there was to be no bombing of the Argentine mainland airbases; and the invasion to retake the Falklands would be a political decision made in the United Kingdom.[10]

Transcribing the guidelines of the Inner Cabinet into military action, at the highest level, was the function of one man, Chief of the Defence Staff, Admiral Lewin.

Admiral Lewin provided overall military direction of the campaign and was the single interface between political and military leaders. This arrangement was significant in that Admiral Lewin's position and function had changed shortly before the Argentine invasion of the Falklands. Under a Ministry of Defence reorganization, his status changed from being the Chairman of the Chiefs of Staff Committee, where he was to represent the collective view of all the services, to being an independent member, autonomous from the Service Chiefs, able to render his personal views to the ministers. The role of the Chiefs of Staff Committee became one of formulating advise and converting political directives into military orders in the name of Admiral Lewin and the Inner Cabinet. This new, untried arrangement proved to be a major success in the Falklands Conflict.[11]

In command of British operations in the Falklands was Admiral Sir John Fieldhouse who, in his position as Commander-in-Chief of the Fleet, was designated as the Commander, Task Force Falklands. Aided by deputies for land and air, Admiral Fieldhouse retained his headquarters at Northwood, England, a suburb of London located some 8,000 miles from the center of the action.[12]

In the operational area of the Falklands, command of all forces within the 200 mile exclusion zone around the Falklands Islands initially fell to Rear Admiral John Woodward, Flag Officer, First Flotilla. Exceptions were the submarines which were deployed to the South Atlantic as well

as ships and aircraft used for logistics outside the exclusion zone. These excepted forces were commanded directly by Admiral Fieldhouse from Northwood. As landing operations started at San Carlos, Commodore Michael Clapp, Commander, Amphibious Warfare Forces, took command of landing forces and reported directly to Admiral Fieldhouse at Northwood. Once established on shore, all land operations fell under the command of the Commander, Land Forces. Initially the land forces commander was Brigadier Julian Thompson, but as the size of the land forces grew, Major General Jeremy Moore assumed command of all land operations. As with other on-scene commanders, the Commander, Land Forces reported directly to Admiral Fieldhouse at Northwood. (See Appendix A)[13]

For the most part, the command and control structure employed by the British performed well in their retaking of the Falklands Islands. Probably the key to that success lies in the fact that the on-scene commanders were given a great deal of autonomy in conducting military operations. Also key to the success was the simple command structure and the harmonious working relationships found at the highest levels, from the Inner Cabinet through Admiral Lewin to Admiral Fieldhouse. Having each of the major combat elements in the Falklands report 8,000 miles back to Admiral Fieldhouse, however, presented at least one significant problem and resulted in the disaster at Bluff Cove. Apparently in this operation, the three-way link between the

land, naval, and task force commanders broke down in planning and executing a land forces initiative to establish a second beachhead at Bluff Cove, an idea which had only the apprehensive support of the naval forces commander. As a result, the British suffered unnecessary casualties when the Argentines struck the landing operation by air at a time when the British were postured without adequate air defense.[14] Autonomy of command, which for the most part worked to the advantage of British forces, worked against them in the Bluff Cove operation. Perhaps, had there been a more unified field command structure, the disaster at Bluff Cove could have been averted. The 8,000 mile link to the unifying commander at Northwood, England, apparently was too much distance to overcome for this short notice, controversial mission.

Communications across that 8,000 mile link and between the various command and control elements will be discussed next.

Communications

At the outbreak of the Falklands conflict, the British, like many of their Western partners, found themselves almost exclusively geared for a war in Europe where communications equipment was designed to operate over relative short distances in fairly benign climatic conditions and terrain. To support a rapid British response to the Argentine invasion of the Falklands Islands, 8,000

miles from the United Kingdom and outside of the Northern hemisphere, a degree of innovation was necessary, particularly in long-haul communications.[13]

Satellite communications was the mainstay of British command and control in their retaking the Falklands. All branches of the British military were geared toward heavy use of satellites for long-haul communications. Unfortunately, the British Ministry of Defence' own satellite network known as Skynet did not have coverage in the area of the Falklands. On the positive side, many of the British satellite terminals were designed to operate with a number of other systems including the United States' Defense Satellite Communications System (DSCS). DSCS and the U.S. commercial maritime satellite network, MARISAT, provided the bulk of British satellite connectivity.[14]

Augmenting and backing up satellite communications was high frequency (HF) radio. HF radio took on added importance as a number of Royal Navy ships and submarines were not equipped for satellite communications, and those that were needed a long-haul backup. Furthermore, very low frequency (VLF) transmissions from the United Kingdom to the submarines did not reach beyond the equator. Unfortunately, since the British had previously lost the use of South African naval radio facilities, they had no HF coverage to the Falklands. In response, the British realigned antennas on Gibralter, placed into service antiquated transmitters on Ascension Island, borrowed the use of radio facilities from

Canada and New Zealand, and eventually were able to place in operation 26 HF transmitters around the world which could be keyed from the United Kingdom.[17]

At the terminal end of the communications networks innovation was also required. A significant portion of the British armada included ships taken up from trade. Many of these ships had to be equipped with any combination of ultra high frequency (UHF) radios, HF radios with on-line cryptographic gear, commercial satellite terminals, and off-line cryptographic equipment. Furthermore, to operate the equipment, these ships were provided with Royal Navy, Army, and Royal Air Force radio operators. Still, at the tactical level, as ships got out of UHF range and HF was required, there was a shortage of secure voice circuits as there were not enough secure voice assets to go around. The amount of information revealed over nonsecure HF links was reported to be of real tactical significance.[18]

On the ground, British forces seemed better prepared. An array of vehicle-mounted, man-packed, and transportable satellite, HF, very high frequency (VHF), and UHF radio assets adequately supported the land forces commander and his troops. No shortages of radio assets, available channels, or useable frequencies were reported. At most, the land forces commander too suffered from a shortage of secure voice capability over HF links.[19]

Interoperability, a problem which has plagued recent American military operations, was not a problem for the

British. Only two interoperability related issues were reported. The first dealt with shortages of secure voice equipment which left some HF circuits uncovered, and the second concerned the operation of electronic systems on a single ship -apparently the HMS Sheffield had her search radar turned off to prevent interference on a satellite terminal and was caught unprepared when she was attacked by the Argentines with exocet missiles. Systems wise, HF radio used for ship-to-ship and ship-to-shore communications was fully compatible with HF equipment used by the Army and the Royal Air Force. Similarly, UHF and VHF equipment used by land, sea, and air forces were fully interoperable and performed well during the operations in the Falklands.[20]

System capacity also appeared to be adequate but heavily used. While there were reported to be some shortages in satellite data circuits, there is general agreement that all systems handled the demand fairly well. A point of fact, looking at message traffic on the Flag Ship HMS Hermes, 200,000 hard copy messages were handled on 18 nets between 15 April and 1 July 1982, an average of 800 messages a day. A concern expressed by some was that system capacity was, in general, out growing the staff's ability to use the information passed. As noted by Rear Admiral Patrick J. Symons, Royal Navy, in speaking of command, control, and communications in the Falklands Islands Conflict,

> The capacity of modern communications systems is beginning to involve users in a new and unresolved conundrum. The information passed on communication channels increases to meet the capacity of the channel to accept it, but the capacity of these modern systems is outpacing the user's ability to sort the information into manageable pieces. Information vital to the conduct of the operation is in danger of being lost within the huge amount of additional information passing across the planning and operational staff's desk. This is particularly so when in any small staff there is always one person who must read and digest every signal and must be aware of all aspects of the operation.[21]

Voice circuits on the other hand seemed to garner more success and more appreciation by the users. Voice, not data, circuits provided the critical link for command decision making. The ability of the commanders to talk with one another on short notice was seen as an enormous advantage. Through voice contact, many problems or misunderstandings were avoided. Voice system capacity, except for previously noted HF secure voice shortages, was never reported as a problem.[22]

In summary, communications support for British operations in the Falklands recovered superbly from a deficit of systems which could not extend connectivity into the South Atlantic. In review, one could not categorize that support as anything other than a complete success.

Discussed next will be the lessons learned from this most successful command, control, and communications effort.

Lessons Learned

The successful application of command, control, and, communications in the Falklands Conflict by the British offers a number of lessons to planners in the United States.

First, at the heart of each military operation must be a simple national political-military chain of command. For the British, the Inner Cabinet, working through the Chief of Defense Staff, provided such a structure. The Inner Cabinet provided strong political leadership and ensured that the diplomatic, economic, and military aspects of the operation were tied together. Political leaders were sensitive to the problems faced by the field commanders, and the commanders were never held back by the lack of timely political decisions.[23] Commenting on the British experience in the Falklands, House of Commons member Neville Trotter wrote,

> I think the lessons that we have learned here are that there must be no political delays. There must be full political support which there was. There must be a minimum of paper work, no financial mistakes and a lack of interference with the commanders on the spot. All those things applied and I'm sure they are lessons well learned for the future.[24]

Second, and tied closely to the first, is the requirement that field commanders be given autonomy in conducting military operations, provided those operations are carried out within the political framework and follow the rules of engagement handed down by national leaders. British leadership saw this factor as a key element in their success in the Falklands. Neville Trotter wrote,

> I think a very important fact is that there was no contact between London and the task force in the South Atlantic. The Chief of Defence Staff could have picked up the phone at any time and talked directly to his commanders down there but he resisted that temptation. He was determined, as he put it, that this was not going to be a war where the man in the foxhole was being told what to do by the Ministry in London. So the Chief of Defence Staff had no contact with the task force on a personal level until the flagship returned to Portsmouth....[88]

Third, while autonomy in command is essential, so too is unity of command. And unity of command is best guaranteed when the unifying commander is physically located in the theater of operations. Throughout the Falklands campaign, the British excercised command of the task force from Northwood, England, 8,000 miles from the fighting. Initially, that arrangement proved to be most successful when the war had a single dimension--naval warfare. Later, as the fighting took on a second dimension, land operations, the sea and land commanders shared equal responsibility for prosecuting the war. When there was not full agreement between the two, as was the situation during the Bluff Cove landing, problems arose. In hind sight, it seems clear that the disaster at Bluff Cove might have been averted had Admiral Fieldhouse moved his command to the Falklands when the conflict took on a land warfare dimension.

Fourth, one cannot assume to know the location of the next war or military conflict. Therefore, if a nation, like the United states, is to exercise its super power status in defense of the free world, it must have the command, control, and communications resources at its

disposal on exceptionally short notice. For the British, who had been almost exclusively European oriented in its military planning and preparation, there was a serious shortage of long-haul communications assets. Fortunately for them, a number of their allies, including the United States, filled the needed shortages and did so with systems that would interoperate with British systems. Good fortune, not good planning, saved the day for the British.

Fifth, innovation and flexibility are critical in filling the gaps between prewar planning and actual war-time requirements. The British exercised this innovation and flexibility in a number of ways; however, their most prevalent display was in the equipping of ships with satellite terminals, HF equipment, and crypto gear. However, had those items not been available, the task would have been impossible. Thus, innovation and flexibility are only possible when favorable circumstances exist or are created. The lesson for United States planners is that flexibility, and therefore interoperability (it is not flexible if it will not interoperate), must be built in to U.S. designed and procured military communications systems. Furthermore, sufficient quantities must be made available to meet those unforeseen needs. Finally, U.S. exercises must test flexibility and innovation by simulating conditions similar to those the British experienced in fighting in the Falklands.

Sixth, satellite communications capacity is invaluable for world-wide responsiveness. No other communications system has the coverage and the capacity of that provided by satellite communications. So convinced are the British after their experience in the Falklands, they are planning to acquire a new military space segment and provide terminals on all major surface ships.[26]

Seventh, while satellite communications systems can meet most long-haul communications needs, particularly those of high volume, high data rate users, they do not have the simplicity and flexibility of HF. Commenting on the lessons of the Falklands Conflict, Captain A.R. Wood of the Royal Navy wrote, "In our view, the need for HF back-up will always remain, because flexibility in communications, as in all other warfare areas, is essential."[27]

Eighth, the importance of secure voice communications cannot be over emphasized. The ability of commanders to talk with one another was seen by the British as key in coordinating and controlling operations in the South Atlantic. So vital was voice communications that when security was not provided there were times that the systems were used, knowing that significant tactical intelligence was being given away.[28]

Ninth, and finally, all participants in military campaigns must learn to resist the use of communications systems simply because the capacity for use is there. The endless cycle of more capacity drawing more use which drives

more capacity etc.,etc. has the threat of overwhelming operational staffs and drawing attention away from the basic elements of war fighting. Communications is the glue that binds, but it is also to goo that causes efficiency to get wrapped around the axle.

An American success, the Invasion of Grenada will be discussed next.

CHAPTER IV

THE GRENADA INVASION

On 25 October 1983, under code-name Urgent Fury, members of the United States military invaded the island nation of Grenada following the 19 October murder of Prime Minister Maurice Bishop and the subsequent collapse of government institutions and public order.[1] Responding in part to an urgent request for help from the Organization of Eastern Caribbean States, President Reagan said that he took this action for three reasons:

> First and of overriding importance, to protect innocent lives, including up to 1,000 Americans whose personal safety is, of course, my paramount concern. Second, to forestall further chaos, and third, to assist in the restoration of conditions of law and order and of government institutions to the island of Grenada.... [2]

To secure objectives in Grenada and to facilitate operations, the island was operationally split in half. The Marines covered the northern half of the island while Army rangers covered the south.[3] The invasion in the south focused on an unfinished runway at Point Salines. Shortly after midnight on 25 October 1983, Army special forces commandos parachuted onto the island to prepare the runway for C-130 cargo aircraft carrying 700 Army rangers. After the rangers had secured the runway, 800 more troops would land, freeing the rangers to press northward where they were to secure the safety of American medical students and bring under control the capital of St. Georges. In the north, 400 Marines would land and secure the small airport at Pearls.

Preceding the operations in the north and south, Navy seal teams were airdropped near St. Georges to secure the safety of the Grenadian Governor General who was being held under house arrest by opposing forces in the governor's mansion and to capture the government radio station at St. Georges.[4] In total, an invasion force of 1,900 U.S. troops, reaching a high of abo 5,000 in five days, and 300 troops from the assisting neighboring islands encountered about 1,200 Grenadians, 780 Cubans, 49 Soviets, 24 North Koreans, 16 East Germans, 14 Bulgarians, and 3 or 4 Libyans.[5] Within three days all main objectives were accomplished. Five hundred ninety-nine (599) Americans and 80 foreign nationals were evacuated, and U.S. forces were successful in the eventual reestablishment of a representative form of government in Grenada.[6]

That is not to say, however, that the invasion went without challenge. The first challenge was the lack of good intelligence data. For example, at Point Salines operations bogged down because resistance was much greater than expected.[7] In attempting to rescue the Governor General, American forces were stymied by larger Cuban and Grenadian forces than anticipated. By listening to Cuban radio broadcasts, it seemed that the resistance was being directed from a place called Fort Frederick. As it turned out, but not previously known, Fort Frederick was the nerve center for the Cuban and Grenadian forces and once it was destroyed resistance simply melted away.[8] Topographical data was

another problem. Instead of accurate grid maps, American invaders were forced to improvise by using tourist maps.[9] Finally, the invasion force lacked precise data on the location of the American medical students they were to rescue. One account noted that attack planners did not realize that the American medical students were spread out over three locations.[10] The final challenge to invading forces was the lack of a fully integrated, interoperable communications system. This latter challenge will be discussed later, after a review of the command and control structure for the invasion of Grenada.

Command and Control

Planning for the invasion of Grenada began in earnest on 21 October 1983, four days before the invasion itself.[11] Prior to 21 October, and after prime Minister Bishop's arrest on 13 October, some planning had been done for a noncombatant evacuation of Americans from Grenada, but it was not until late on 22 October that Presidential confirmation was given to the Commander-in-Chief, Atlantic Command (CINCLANT), Admiral Wesley McDonald, through the Joint Chiefs of Staff (JCS), to plan the expanded mission.[12] After JCS review, modification, and approval of the plan, and after two late meetings of the National Security Council, President Reagan made the final decision on 23 October to launch the invasion two days hence. In making

the decision, President Reagan ordered full authority for the operation to be vested in the JCS to avoid command and control bottle necks that were built into previous American operations.[13]

To carry out the invasion of Grenada, Joint Task Force (JTF) 120 was established, and Vice Admiral Joseph Metcalf III was placed in command. Assigned to JTF 120 were elements of all United States services: Army, Navy, Air Force, and Marines. Supporting the invasion, but not under Admiral Metcalf's command, was a force of Policeman from Barbados, Jamaica, and other Caribbean nations known collectively as the Caribbean Peacekeeping Force. Also supporting JTF 120 was the U.S.S. Independence Battle Group, elements of Military Airlift Command, Tactical Air Command, Strategic Air Command, and the U.S. Readiness Command.[14] Appendix B illustrates the chain of command just described.

In executing the mission, the command and control structure operated with simplicity and was designed to employ forces in a manner consistent with their training. From the President down mission type orders were given where the upper levels of command decided the "what" of the mission and the lower elements decided the "how".[15] To allow forces to fight the way they were trained, two ground commanders were used, one for the Marines in the north and another for the Army units in the south. While violating a principle of war regarding unity of command, the adjustment was necessary to ensure that differences of operating styles

between the services did not hamper operations.[16] To improve unity of effort, Admiral Metcalf held a daily conference of subordinate joint task force commanders. Each day these subordinate commanders came to his flagship, the U.S.S. Guam stationed off Pearl airport, or he went ashore to decide the next days itinerary. The product of each meeting was a hard copy message up the chain of command to CINCLANT and the JCS giving them the military objectives for the next day.[17] Finally, based in part on previous experiences in Vietnam where a considerable portion of his time and attention was consumed in appeasing the upper elements of the chain of command, Admiral Metcalf dedicated a significant portion of his staff to handle such matters. Four members of his staff, under the direction of a Navy Captain, were given the task of working the up side of the chain of command to the National Command Authority. In addition, his operations officer manned a secure phone connection to CINCLANT during all active combat operations. Not less than two situation reports (SITREPS) were submitted each hour. Abandoning the formated SITREP report, Admiral Metcalf preferred instead to use an unformatted, plain English style. That style, he believed, helped reduce confusion and resolve conflict between reports being sent independently by the various service components to their respective headquarters, many reports of which were passed along to the Pentagon. This saturated up-channel reporting, according to Admiral Metcalf, not only kept his seniors

fully informed, but kept their staffs busy and allowed him the time and created conditions such that he could retain control over military action at the local level.[18]

Communications to support command and control will be discussed next.

Communications

As with other military elements of the Grenada invasion, communications support was driven by the time-sensitive, come-as-you-are scenario. However, unlike the fighting elements which were organized to conduct operations independent of one another, communications systems were not allowed such freedom. Communications was to have been the glue that would tie together the operation of the four independent United States military service elements. Unfortunately, communications support failed in meeting certain aspects of that mission. While details of the problems encountered are classified and, therefore, are not available for this report, sufficient information is available in unclassified sources to characterize communications support and to point out successes and failures.

[illegible] cal radio units were brought to the Grenada invasion, as will be discussed later, heavy use was made of satellite voice communications. According to Admiral Wesley M[illegible]ald, CINCLANT,

> Satellite communications were used in most cases all the way from the company level to the JCS. I do not mean that the JCS was on the same voice circuit as a company commander--it was quite the opposite. We had several satellite channels assigned, so we made extensive use of man-pack radio terminals. Of course we backed up our satellite paths with high frequency radios. I don't think I will surprise anyone when I say that in this type of operation, satellite connectivity is absolutely essential.[19]

While Admiral McDonald notes the abundant use of satellite communications, it cannot be said that communications capability itself was abundant. Several participants cite shortages of communications including Admiral Metcalf, Commander of Joint Task Force 120. Admiral Metcalf notes,

> We had one secure voice channel, and this was a task force common circuit. The usual operating practice is for commanders to set up a private circuit. But we had only one channel available, so when Admiral McDonald wanted to talk to me, we had to use the party line. ...when either my call sign or Admiral McDonald's went out over the circuit, the line was instantly cleared. ...if there were things that could not be worked out over the public line, then I would put them on the hard copy.[20]

Similar communications shortages existed in the distribution of intelligence information. One of the more noted intelligence shortcomings of the operation was the lack of up to date topographical information (maps) on Grenada. When adequate maps were found, they apparently had to be flown to the Grenada task force rather than being sent by electrical transmission.[21] In reviewing the Grenada operation Admiral McDonald, CINCLANT, said,

> We have designed and are continuing to design systems which collect intelligence in great volume and in near real time, but I am concerned as to whether we are designing into these systems the communications capability to get that data to the tactical commander in a useable fashion and timely manner...What good is sophisticated satellite imagery sitting in Washington, D.C., or Norfolk, Va., when the field commander who needs it is on the ground in Grenada, on a ship off Lebanon, or in some even more remote corner of the world. [In the future there will be] more and more sophisticated intelligence collection systems, capable of collecting more data faster, but when I look at the communications capacities that we plan...,I don't see the channels being dedicated to moving the data to where it is needed. Nor, for that matter, do I see that we have provided the wherewithal to our tactical commanders to receive, correlate, and make sense out of all that data.[22]

Shortages were not the only communications problems found during the invasion of Grenada; interoperability was another. For example, uncoordinated use of radio frequencies prevented radio communications between Marines in the north and Army Rangers in the south. As such, interservice communication was prevented, except through offshore relay stations, and kept Marine commanders unaware for too long that Rangers were pinned down without adequate armor.[23] In a second incident, it was reported that one member of the invasion force placed a long distance, commercial telephone call to Fort Bragg, N.C. to obtain C-130 gunship support for his unit which was under fire. His message was relayed via satellite and the gunship responded.[24] Commenting overall an the issue of interoperability, Admiral Metcalf wrote, "In Grenada we did not have interoperability with the Army and the Air Force, even though we had been assured at the outset that we did.

So, consequently, we could not make the installed communications work."[35]

Several factors have been cited as the cause of the communications problems which were confronted in Grenada. Among them were insufficient planning for the operation, lack of training, inadequate procedures, maldeployment of communications security keying material for the different radio networks, and lack of preparation through exercise realism.[36] While the details of most of the above noted causes are not available in unclassified sources, the issue of exercise realism has been perceptively explained by Admiral Metcalf following the invasion:

> We do conduct communications exercises in the Navy, but in these exercises, we give our communicators about 12 months preparation. Therefore, it should not be surprising that when the exercises start, communications work.... The communicators may not be so much at fault. Our failure in preparatory exercises to uncover and anticipate problems similar to those we faced in Grenada may have been because our exercises are overprepared. Given enough time, anyone can make communications work. And if the objective of an exercise is to make things work, then the conduct of the exercise will be optimized to show that the exercise will work. Unfortunately, in a crisis situation--a "come-as-you-are" situation--they did not work.[37]

Wrapping up the Grenada operation, lessons learned in command, control, and communications will be discussed next.

Lessons Learned

The military operation in Grenada, while it will not go down in history as one of America's great undertakings, provides some interesting and useful lessons in the area of command, control, and communications.

First, there needs to be more unification of the U.S. military. This can be seen in the fact that the different operating procedures between the service branches caused disunity of operations in Grenada. Unification can take many forms, from more joint exercises to major reorganizations. It is not the intent of this paper to advocate one form or another, only to point out that the invasion of Grenada pointed to a need for more interservice unification.[28]

Second, planning needs to be improved. While it can be argued that four days of planning is not sufficient for an operation of this type, one must also recognize the U.S. military obligation to be responsive to the national leaders. Grenada was a real-world operation which demanded an immediate response, even if not fully planned. Nonetheless, two lessons were learned in the area of planning. In response to C3 problems, U.S. Atlantic Command, in 1985, was developing a generic C3 plan that would permit rapid adaptation to varying situations. If successful, this plan could become a model for other unified or specified commands.[29] Next, responding in Congressional

hearings on the Grenada operation, Admiral McDonald, CINCLANT, noted,

> We found that in the command and control area... effectiveness could have been bolstered with a few more representatives of the services had we the time to include them in the planning....As an example, General Trobaugh [Commanding General of the 82nd Airborn Division and commander of Army ground forces in Grenada] didn't get into the planning until about 2 [two] days before he was designated to participate and to lead the Ranger battalion.[30]

Third, the Grenada operation validated a simple command structure where authority is delegated to the lowest possible level. According to Admiral Metcalf, JTF 120 Commander, having the combat elements fight as they were trained and having a command structure where it was very, very clear that the field commander was in charge were key elements in the success of the operation. Quoting Admiral Metcalf,

> I felt that I could tell the various command elements, whether it was the Army, Air Force or anybody else, what I wanted to do. I just stayed out of the "how" just like my seniors stayed out of the "how" with me....They gave me guidelines, very general. I went down there and we had no mucking around from on high.[31]

Fourth, and closely tied to lesson number three, is the requirement to keep everyone up the line well informed. Admirals McDonald and Metcalf both agree that by keeping his superiors fully informed, near real-time through frequent SITREPS, Admiral Metcalf was able to exercise greater freedom of command locally.[32] In small, politically sensitive operations, like Grenada, extensive up channel reporting is thus seen as another key to success.

Fifth, innovation by field units played a major role in filling C3 gaps and helped bring about a successful operation. Incidents like the soldier who used the commercial telephone to request C-130 gunship support and the Ranger officer who dialed the Grand Anse Campus to see if the students he was to rescue were still there point to innovative successes.[33] While innovation is a poor substitute for a well planned operation, it can and in the case of the Grenada invasion it did contribute to success. As such innovation should be encourage as part of unit training and field exercises.

Sixth, the invasion of Grenada pointed out quite clearly the need for and expanded intelligence distribution system. As more and more intelligence data is collected, there must be the wherewithal to get that data to the tactical commander in near real-time. Furthermore, tactical commanders must have the capacity to analyze and correlate the data for immediate use.

Seventh, and last, more realism needs to be placed into joint exercises, particularly that regarding communications to support command and control. Rather than giving communicators months to work the details of communications support, they instead should be forced to exercise with the same warning that would be experienced in real-world situations. Through exercise realism, interoperability can be tested and verified or fixed as necessary before it is challenged for the first time under

live fire.[34] Communicators, like the fighting forces, must concentrate on preparing for the wartime mission and avoid the trap of looking primarily at day-to-day operations.

In another successful military operation, the next chapter will look at the C3 implications of the Libyian raid.

CHAPTER V

LIBYA RAID

On the late evening of 15 April and early morning of 16 April 1986, under the code name El Dorado Canyon, the United States launched a series of military air strikes against ground targets inside Libya. The timing of the attack was such that while some of the strike aircraft were still in the air, President Reagan was able to address the US public and much of the world. He emphasized that this action was a matter of US self defense against Libya's state-sponsored terrorism. In part, he stated, "Self defense is not only our right, it is our duty. It is the purpose behind the mission...a mission fully consistent with Article 51 of the U.N. Charter."[1]

The use of force was specifically prompted by what the President claimed was "irrefutable proof" that Libya had directed the terrorist bombing of a West Berlin discotheque nine days earlier which had killed one American and injured 200 others.[2]

The raid was designed to hit directly at the heart of Gaddafi's ability to export terrorism with the belief that such a preemptive strike would provide him "incentives and reasons to alter his criminal behavior." The final targets of the raid were selected at the National Security Council level "within the circle of the President's advisors."[3] Ultimately, five targets were selected:

- the Aziziyah barracks which was described as the command and control headquarters for Libyan terrorism,

- the military facilities at Tripoli's main airport,

- the Side Bilal base, which administration officials said was used to train terrorists in underwater sabotage,

- the Jamahiriyah military barracks in Benghazi which were described as another terrorist command post, and finally,

- the Benina air base southeast of Benghazi.[4]

All except one of these targets were chosen because of their direct connection to terrorist activity. The single exception was the Benina military airfield which based Libyan fighter aircraft. This target was hit to preempt Libyan interceptors from taking off and attacking the incoming US bombers.[5] It should also be noted that the French Embassy in Tripoli and several of the neighboring residential buildings also were bombed inadvertently during the raid; they were not targeted.[6]

Mission planners decided, as part of the effort to attain tactical surprise, to hit all five targets simultaneously. This decision had crucial impact on nearly every aspect of the operation since it meant that the available US Navy resources could not perform the mission unilaterally.[7] The only two types of aircraft in the US inventory capable of conducting a precision night attack were the Navy's A-6s and the Air Force's F-111s. The Navy had two

aircraft carriers in the Mediterranean at the time planning for the raid began: The America and The Coral Sea. Each had ten A-6 aircraft, but these were not near the total of 32 aircraft estimated as required to successfully hit all five targets with one raid. The closest F-111s were based in the United Kingdom (UK); and use of these UK based aircraft dramatically affected the scope and complexity of the operation. Planning was even further compounded when the French refused to grant authority to overfly France. This refusal increased the distance of the flight route from Great Britain to Tripoli by about 1300 nautical miles each way, added 6-7 hours of flight time for the pilots and crews, and forced a tremendous amount of additional refueling support from tanker aircraft.

The size of the strike force's final configuration was immense and complex. Approximately 100 aircraft were launched in direct support of the raid:

Air Force

28 KC-10 and KC-135 tankers
5 EF-111 Raven ECM (Electronic Countermeasure) aircraft
24 FB-111 Strike aircraft (six of these were airborne spares, and returned to base after the initial refueling)

Navy

14 A-6E strike aircraft
12 A-7E and F/A-18 Electronic warfare and jamming aircraft which undertook air defense suppression for the mission.
Several F-14 Tomcats which took up the long range Combat Air Patrol (CAP) responsibilities
4 E-2C Hawkeye airborne command and control and warning aircraft.

In addition to the above, several helicopters were deployed for possible search and rescue operations, and "50-80 more aircraft were airborne in the vicinity of the carriers some 150-200 miles off shore."[9] In fact, the total size of the force was criticized as excessive from various sources. All combined, the whole operation involved (to some degree) "more aircraft and combat ships than Britain employed during its entire campaign in the Falklands."[10]

The first aircraft to launch were the 28 tankers from Britain followed closely by the F/EF-111s. Four refuelings and several hours later, these planes rounded the tip of Tunisia and were integrated into the Navy's airborne armada by an Air Force officer aboard a KC-10 tanker which had been modified to function also as an airborne command coordination center.

Although joint in nature, the actual execution of the strike was operationally and geographically divided between the Navy and Air Force. Navy A-6s were assigned the target in the Benghazi area, and the Air Force F-111s hit the other three targets in the vicinity of Tripoli. The actual combat commenced at 0200 (local Libyan time), lasted less than 12 minutes, and dropped 60 tons of munitions. However, the planning, coordination and control required to create that 12 minutes of combat started much earlier and demanded careful and detailed arrangements.

Command and Control

The command and control philosophy used in an operation can be crucial to its success. "Local command always has been important, but we tend to lose sight of it at times."[11] For example, in the 1983 Navy air strikes in Lebanon, an Army general in Europe under pressure from the US caused the local on-scene commander to launch strikes "at the wrong time with the wrong weapons."[12] In the case of El Dorado Canyon, every effort was made to provide the on-scene commander full authority to make any necessary decisions. Admiral Crowe, Chairman of the JCS, briefly described his "noninterference" theory of command and control: "You just clinch your teeth, and stay the hell out of it."[13]

The Commander of the Navy's Sixth Fleet located in the Mediterranean, Vice Admiral Frank Kelso, was designated as the joint commander of the overall operation. In accordance with Admiral Crowe's philosophy, this on-scene commander was given command and control of the operation. He was given the task and the timeframe to attack; it was then his responsibility to put it all together.[14] However, he also had full authority and flexibility to deal with any varying contingencies or changes in the strike environment.[15] In fact, Vice Admiral Kelso had unilateral authority to "cancel the raid up to the moment if it looked like weather or operational factors could be a problem."[16] As a measure of the command and control effectiveness, Admiral Crowe indicated that the raid could have been terminated up until 10 minutes prior to execution.

The concept of nonint:rference with command and control seems to have cascaded down the entire chain of command in varying degrees. A formal diagram of the command and control arrangements might appear complex -- reflecting operational control lines, tactical control responsibilities, vertical/lateral coordination channels, reporting chains, etc. However, in actual practice, normal and existing channels through European Command (EUCOM) were used. Each service essentially did its own target weaponeering and planning for the operational area.[17] Nearly all of the detailed staff planning fell largely to the unit level. Initial warning orders for a possible strike against Libya were issued to various tasked organizations in late December 1985.[18] "The nature of the contingency tasking severely limited their [higher headquarters] assistance."[19] Certainly, there was an understandable reluctance of headquarters staff officers who would not fly the mission to make firm decisions for those who would.[20] In addition, there was a substantial flow of inquiries and guidance direct to the tasked units.

Preparation for the actual operation entailed limited live rehearsals and exercises with the Navy and tanker forces. One specific effort was for the F-111s to practice a long rendezvous with the tankers. Although the practice went reasonably well, it was ultimately decided to avoid the command and control and communications complexities such a rendezvous would create, and simply have the fighters accompany the tankers along the entire route.[21] In addition, it

was quickly discovered that Navy and Air Force vernacular and terminology differ greatly. As a result, liaison officers were exchanged among USAF organizations and with the Navy to facilitate planning and coordination. For example, the Air Force provided an experienced pilot to be a part of the Navy's battlestaff during the raid; the Navy also deployed a similarly qualified officer to sit as part of the command structure aboard the KC-10 command aircraft.[22]

As mentioned earlier, the actual area of operation was divided, the Air Force taking Tripoli, and the Navy taking those targets in the Benghazi area. This division of responsibility was done largely to simplify and deconflict command and control of the operational aspects of the raid. The modified KC-10 tanker was given charge of the Air Force resources while the carrier America controlled the Navy aircraft. The airborne E-2C Hawkeyes provided early warning, air control vectors, and operations.

Up-channel reporting was minimized. In fact, General Donelly, Commander-in-Chief, US Air Forces in Europe, indicated that there were no status reporting requirements imposed for the actual raid.[23] Clearly, the relatively short duration of the raid would have precluded any formal or elaborate status reporting structure, regardless of higher headquarters desires. However, timely reporting of the preliminary results was essential for at least two reasons. First, President Reagan went on national television to discuss the raid with the public; he needed at least some information

on how it went. Second and more tragically, an aircraft and its two crew members were lost during the combat. Families had to be notified prior to the public release of the information. This up-channel reporting appears to have been handled for the most part informally and verbally using established communication systems.

Communications

Communication systems were an integrated part of El Dorado Canyon from its inception to its conclusion. In fact it can be said communications provided the impetus for the President's decision to authorize the raid, specifically, the American intelligence interception of a message from Gadaffi ordering an attack on Americans "to cause maximum and indiscriminate casualties."[24] Another communications source -- an intercepted Libyan message outlined the attack being planned in West Berlin.[25] The significance of communications was illustrated further when a secure call just prior to launch from HQ SAC in Omaha to the UK was necessary to confirm that the mission was still on. Apparently, the execution order was handcarried for security reasons to most of the tasked organizations. The tanker representatives at HQ SAC had not been notified that a large portion of their assets were soon to take off in support of the raid.[26] In addition, five minutes before the actual attack, jamming aircraft went into Libya to disrupt radar and communication systems.[27] The suppression of these communications was considered crucial to

the success of the mission. In fact, one of the reasons Navy EA-6 aircraft were used was because the EF-111s could not jam one of the Libyan frequency bands.[28] A final example of the criticality of communications is that one of the attack aircraft was "late getting off a tanker." He aborted the mission because at that point, he was out of sequence and timing with the rest of the attack force, and at night and without communications (due to radio silence procedures), the pilot "didn't believe he should go in."[29]

The array of communications utilized for the raid evolved throughout the planning phase. During the initial planning stages of El Dorado Canyon, fixed, existing communication facilities were the primary means of communications. During the actual operation, airborne communications became the predominant means to maintain command and control. While the communications generally worked well, there were problems and deficiencies.

Initial planning actions placed a premium demand on the availability of secure voice communications. Unfortunately, access to this network was extremely limited at the unit level. Most bases throughout the Air Force possess only one secure phone to support the entire installation. Compounding the problem was the fact that not all the existing secure phones are compatible. There were times when action planners had to travel physically to another facility or even a geographically distant installation to conduct business on secure phones.

As one might expect, intelligence communications requirements were extensive. Target selection planning and weaponeering were critical to mission success. Multiple locations needed extensive secure photo and other imagery. The Intratheater Imagery Transmission System (IITS) was used extensively by the US European intelligence community. However, IITS terminals were not available at every location involved with planning the raid. Also, the sheer volume of information exceeded the system's capacity. Therefore, regular airlift shuttles of 2-3 times per week were required to disseminate the information. Over the three and one half months between initial notification and the actual execution of the raid, 12,000 pictures and images were hand carried to at least three separate locations. IITS did prove particularly indispensable and effective in the distribution of time sensitive material.[30]

Command and Control was supported primarily by satellite communication (SATCOM) systems. Two SATCOM nets were used to link Washington, EUCOM, USAFE, The Sixth Fleet, and the F-111 wing at Lakenheath. In addition, extra communications were put into a KC-10 tanker in order to create a limited airborne command and control capability. A SATCOM terminal was installed to contact the Joint Commander (located on the carrier America), as well as other higher headquarters as necessary. The SATCOM terminal is not a part of the organic capability of the KC-10, and the equipment was literally put into the main body of the aircraft by strapping

it to a table; yet it was a primary means of communication between the commander of the Air Force forces and Vice Admiral Kelso.[31]

The joint exercises with the Navy and the training missions with SAC quickly highlighted another area of interoperability problems. Specifically, the Air Force F-111 fighters had Have Quick frequency hopping UHF radios. However, neither the USAF tankers not any of the Navy aircraft had these type or compatible radios. The radios were installed in the tankers before the mission, but were not available to the Navy aircraft. This situation was undoubtedly at least a consideration in the rational used to geographically divide the area of operations.

The operation was conducted in radio silence (at least to the extent possible). All four refuelings in route to the targets were performed without communications, as was the actual combat strike. In fact, concern was created among the pilots because there was no code word established to confirm the go ahead for the attack. Only an abort code was provided. This situation was troublesome since many things could have changed during the six to seven hour flight from the UK to Libya. In addition, limited communications caused problems in linking the fighters back up with the tankers after their exit from the combat zone. This was compounded all the further because one strike aircraft was lost during the strike. The entire armada remained in the vicinity for over an hour trying to account for all aircraft.[32] Eventually, SAC High

Frequency (HF) fixed equipment located at Mildenhall UK was used to confirm the number of aircraft which had returned from the strike zone.

One final communications area deserves specific mention. That is the interface between the Air Force fighters and the Navy Search and Rescue (SAR) forces. This interface was weak. Apparently due to the distance from the UK, the USAF planners had inadvertently overlooked making any arrangements for SAR operations.[33] Specific procedures for contacting and working with the Navy SAR effort had not been worked out or exercised. This deficiency was severely emphasized when trying to locate the missing F-111.

Lessons Learned

Admiral Crowe commented after the raid that "We didn't do everything right..." but "I don't see any military action as flawless,"[34] on balance, the overall Libya mission "was very successful."[35] Perhaps a great deal of the success experienced was simply because the command and control and communications equipment and procedures were never really stressed during the raid; resistance outside the immediate area of attack was nonexistent. Libyan air defense aircraft never launched; had they, and been effective, lack of an execute code word might have caused substantial confusion. In addition, the full tanker force remained highly vulnerable while conducting the after raid link-up with the fighters. It's likely that even Libyan interceptors could have raised

havoc in such a target rich environment. However, even with no resistance directed toward command and control and communications, problems surfaced. The area of action was divided because of interoperability difficulties: Navy aircraft did not possess the Have Quick radios, terminology and procedures varied significantly, and the Naval SAR operations were not fully coordinated with or familiar to the Air Force pilots.

The first lesson is clear. There is a need for more unification among the services. One of the results of the Libya raid analyses was the creation of a JCS Military Operating Procedure (MOP) 191 dated 14 May 1987, which calls for periodic no-notice interoperability exercises among the services.

Second, unit level planning can be crucial to mission success. Three and one-half months provided limited but essentially adequate time to rehearse and practice procedures. Still major areas of interface were overlooked. It is essential that basic procedures should be established and practiced as a normal way of doing business among all the services, or at least a cross familiarization with the other services prior to a crisis. In addition, wing/unit level planners need a working knowledge of existing command and control and communications capabilities. When the scope of the mission was expanded unit level personnel were time constrained and therefore unable to adequately assess the advisability of using the E-3 AWACS (vice the jury-rigged

KC-10) as the airborne command post. One of the F-111 wing operational planners indicated that "If he knew then what he has learned since..." he would have concluded that AWACS was the proper tool to command and control the force.

Third, a short, simple chain of command and the delegation of maximum authority to the lowest operational level was again validated. Vice Admiral Kelso had total authority to execute or terminate the mission.

Fourth, an up-channel status reporting structure was essential to keep superiors informed. It was also of critical import to provide a structure which could support the ability of the President or other superiors to provide last minute guidance or direction based on any changing political situations. The balance must be for tactical operational decisions to be the purview of the on scene commander.

Fifth, the planning phase of the operation clearly pointed out the requirement for an expanded intelligence distribution system. Liaison intelligence and weaponeering personnel were also required to support wing level analysis. Time and multiple contingencies may preclude such a deployment of skills in the future. Plus, in a truly joint operation, the crossflow of intelligence between services could be critical.

Sixth, in this situation, the communications technicians had time to jury-rig and reconfigure hardware to make the war fighting resources interoperable and therefore more effective. Time to install or build a communications

capability cannot be part of quick reaction operations. Established interoperable capabilities must exist and be ready to go to war every day.

CHAPTER VI

Lessons Learned

Taken collectively, the U.S. experiences in the Iranian rescue attempt, the invasion of Grenada, and the raid on Libya as well as the British experience in recapturing the Falklands Islands point to a few very clear lessons which, for the most part, were common to all four operations. For the ease of discussion, these lessons have been grouped into three categories: command and control structure/function, communications, and planning and preparation. These three categories will be discussed in the order mentioned.

Command and Control Structure/Function

Three themes dominate the command and control lessons learned. First, there must be unity -- unity of command, unity of effort, unity of operations. Unity is a sense of oneness. There must be only one overall operational commander; there must be only one, well coordinated war fighting effort; there must be only one, centrally guided operational direction. Unfortunately, in all four engagements, unity was not fully achieved. In the three U.S. operations, interservice differences prevented unity. In the retaking of the Falklands, having co-equal commanders in the theater of operations prevented the British from achieving unity of effort.

Second, the command and control structure must be simple, and it must function with simplicity. A short, uncomplicated chain of command works best. At the top, must be strong leadership which can tie the economic, diplomatic and military aspects of the operation together. Strong top leaders are characterized by a willingness to issue mission-type orders then stand aside while the mission is being performed. Three of the four operations had a simple command and control structure (the Falklands, Grenada, and Libya) and each was successful.

Third, and very closely associated with the second, field commanders must be given tactical independence or autonomy. This does not mean that they are allowed to operate on their own, independent of the actions of others. Total independence and autonomy defeats and counters the lesson of unity. Rather, tactical independence means that field commanders are given a mission or objective and then are left to their own best judgement as to how to do the job. Autonomy is derived in a cascading arrangement. It starts at the top where national leadership specifies a national objective and the rules of engagement, and it ends at the bottom where platoon/flight/squadron commanders are given their piece of the action and the rules of combat which apply. Operations in the Falklands, Grenada and Libya successfully applied this lesson of command and control.

Communications

Five interrelated lessons on the use of communications can be seen from these four operations. First, the unpredictable nature of events like the Argentine invasion of the Falklands or the collapse of government institutions in Grenada demand sufficiently available, highly flexible, interoperable communications systems. Insufficiency plagued the British in their operations in the Falklands, and only through the aid of their allies were they able to overcome communications shortages. Startled by the narrow escape, the British are now attempting to achieve communications self-sufficiency. The U.S. had another problem--lack of system interoperability. In the Iranian rescue attempt, communications system interoperability problems were overshadowed by other considerations such as the total failure of the mission for which the lack of interoperability certainly contributed. During the invasion of Grenada, interoperability problems became front page news. On the Libya raid, interoperability was not an operational issue because time allowed technicians and managers to jury-rig and work around interoperability constraints. Nonetheless, the lack of interoperability was a factor in all three U.S. operations and will continue to hinder future military operations until the problems are fixed. Short notice events, where problems can not be worked around, will be particularly troublesome.

Second, all four operations validated the need for both horizontal and vertical communications. Three operations used a blend of horizontal and vertical communications systems and were successful. One operation, the Iranian rescue attempt, tried to omit some elements of horizontal communications by having messages relayed through higher echelons of command and, as a result, met with disaster. Communications proved to be the glue that binds, and the lack of horizontal communications resulted in an operation that was strong in only one dimension.

Third, satellite communications backed-up and augmented by HF radio proved to be the mainstay of long-haul communications, and both had some tactical applications as well. All four operations made extensive use of SATCOM, and at least three of the four used HF. The lesson for future operations of the type characterized by these four events is to have SATCOM and HF systems ready for use and have plenty of both. Prior to the Falklands Conflict, the British had neglected SATCOM coverage in the South Atlantic and found themselves short. Americans would do well not to forget the British experience and never neglect SATCOM or HF.

Fourth, another area that should never be neglected is secure voice communications. In all four operations, secure voice was seen as a key to success. Data communications may provide the most capacity and throughput, but it was secure voice communications that commanders used to coordinate and control the operations. Nothing can

substitute for direct one-to-one contact between commanders. Therefore, in an operational commanders mind, there is no such thing as too much secure voice.

Fifth, as precision operations increase, so too will the communications requirement to handle intelligence data. Precise operations like the bombing of very specific targets in Libya and efforts to rescue American citizens in Iran and Grenada require accurate, up-to-date intelligence information at the wing level and below. Intelligence distribution system shortages during American operations in Grenada and Libya validate this requirement. Furthermore, as advanced avionics and weapons delivery systems are developed and fielded which depend heavily on real-time intelligence data, survivable intelligence distribution system requirements will increase even more.

Planning and Preparation

Operations in Iran, the Falklands, Grenada, and Libya point to three lessons in planning and preparing command, control, and communications for war. First, basic C3 planning needs to be improved. All three American operations had planning shortcomings relating to not having enough of the right people involved in the planning effort. For example, in the Iranian rescue attempt, over concern for secrecy led to planners reviewing and validating their own plan. The lack of independent review hampered effective plan building. In the Grenada operations, haste caused

planners to omit including representatives of the different services in the planning effort. As a result, operational problems developed at the margins where the individual services interface. Furthermore, all three American operations would have benefitted from some form of preplanned, generic, joint C3 planning model. For example, in response to problems encountered in Grenada, U.S. Atlantic Command has decided to develop a generic C3 plan which will permit rapid adaptation to varying situations. Had a similar plan been available for the Libya raid, a number of the troublesome interface points probably would not have been overlooked, particularly at the unit level where knowledge of sister service practices and capabilities is virtually nonexistent.

Second, there needs to be more C3 realism in joint exercises. In reviewing all three American operations, it can be seen that C3 problems increased as planning and preparation time decreased. Given the fact that the U.S. has no control over the response time in contingency situations, and assuming that more often than not the response to trouble spots around the world will be immediate, joint exercises should test the U.S. capability for immediate C3 response. Such was the lesson learned in Grenada and to some extent again in the raid on Libya. The creation of JCS MOP 191 in May 1987, which calls for periodic no-notice interoperability exercises, is a movement in the right direction.

Third, regardless how well a nation plans and prepares for a military operation, innovation and flexibility will still play an important role. Therefore, innovation and flexibility must be cultivated and developed. This lesson applies to C3 as well as it does to any other area. A powerful lesson of all four operations is that communications systems must be flexible--flexible by their design and flexible in their use. U.S. military communications systems must be designed and built for flexibility, which by definition would include the ability to interoperate with one another. Flexibility in use requires innovation. Innovation should be taught, trained, and tested. Joint exercises should include scenarios which force participants to display initiative in the flexible application of C3 assets. The lessons learned from these exercises could then be fed back into training programs and used in the design of future equipment.

CHAPTER VII

CONCLUSION

Together, these four quick reaction contingency operations took place over a span of nearly six years; each action was separated from the other by approximately two years -- yet, the command control and communications lessons learned from each effort remain remarkably the same. This situation certainly makes questionable a claim that lessons derived from the earliest actions were effectively learned and incorporated into the planning and execution of the subsequent operations. The consistency over time of the lessons from these operations clearly demonstrates a problem in the military's ability to transfer experience and effectively institutionalize corrective actions.

An analysis of the reasons why we have been unsuccessful at transferring lessons to future operations is beyond the scope of this paper. However, some observations seem in order.

The nature of the lessons learned from each of these four actions falls into two basic categories: 1) planning and 2) equipment inadequacies.

Some progress has been made. Significant tools have been developed to facilitate planing efforts. The Crisis Action System (CAS) and the Joint Operations Planning System (JOPS) are both designed to structure the planning process so all aspects of an operation are considered and assessed. Unfortunately, a thorough awareness of and experience with

these tools apparently does not extend much below the JCS and Air Staff organizational levels. Yet much of the detailed planning for such operations is performed ad hoc at base and unit levels where "planners" are highly qualified operationally, but frequently have little planning experience. A pervasive problem is the lack of overall knowledge about available equipment and capabilities existing within the total DOD or Service inventories. Currently, there is no structured process, training, or school designed to develop a cadre of professional military planners. Individuals merely bring their specific experience and backgrounds (usually rich in operations) to a plans function and for the most part, learn to plan contingency operations as they are doing it on the job. The result is a very broad range of planning quality. In addition, the ad hoc nature and the generally compressed timeframes of contingency planning seem to further degrade these type planning efforts.

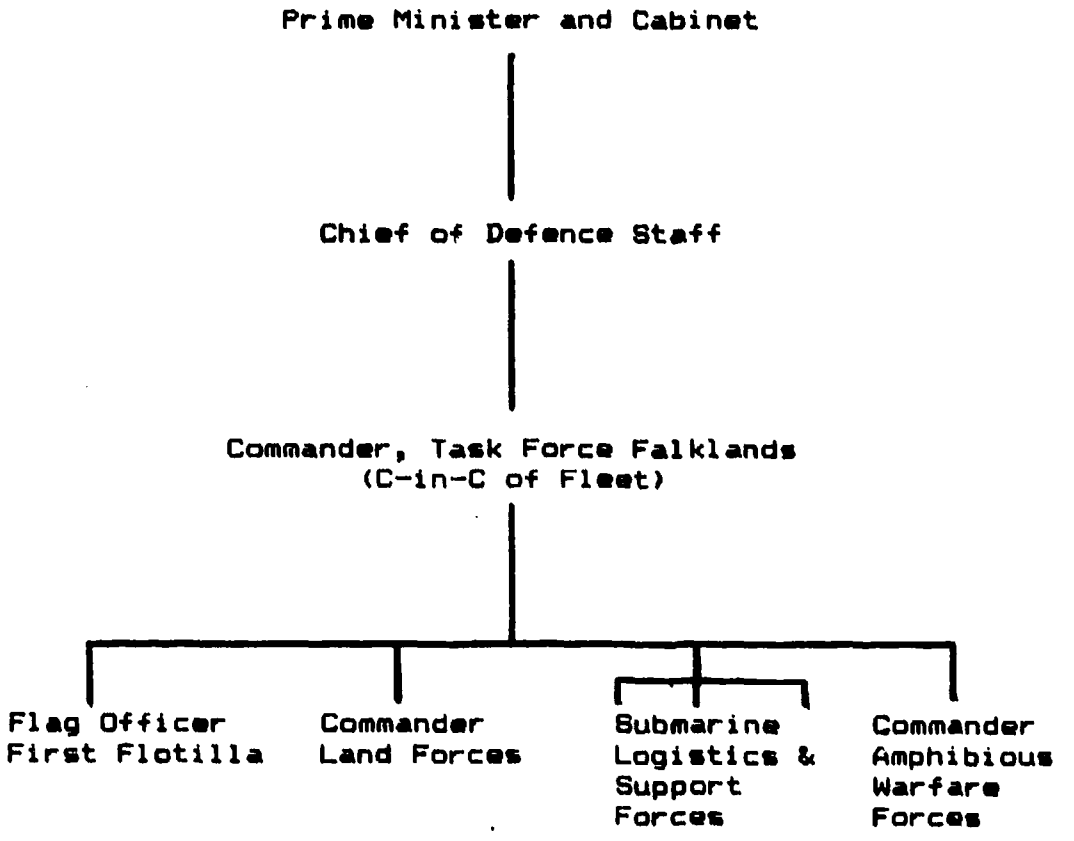
The equipment problem is essentially twofold: 1) a lack of interoperability, and 2) a lack of adequacy or availability. Inadequate secure voice and satellite channel capacity have been long standing problems. It seems the lesson is that regardless of experience and a continuing lessons learned development process, the military appears either unable or unwilling to redirect or commit the resources necessary to fix equipment deficiencies in the command control and communications arena. The traditional approach as been to jury-rig equipment, or develop "work around" procedures. This

method is inevitably cumbersome and inefficient, and provides only interim patch-work solutions. Joint contingency responses and operations require standard configurations and compatible interoperable equipment as a permanent part of the military inventory.

Until priorities are revised and resources are committed to develop a professional planning officer, trained and knowledgeable about existing capabilities within the services, and to acquire adequate and interoperable hardware, Command Control and Communications deficiencies will continue to plague quick reaction contingency operations such as Eagle Claw, Urgent Fury, the Falklands, and El Dorado Canyon.

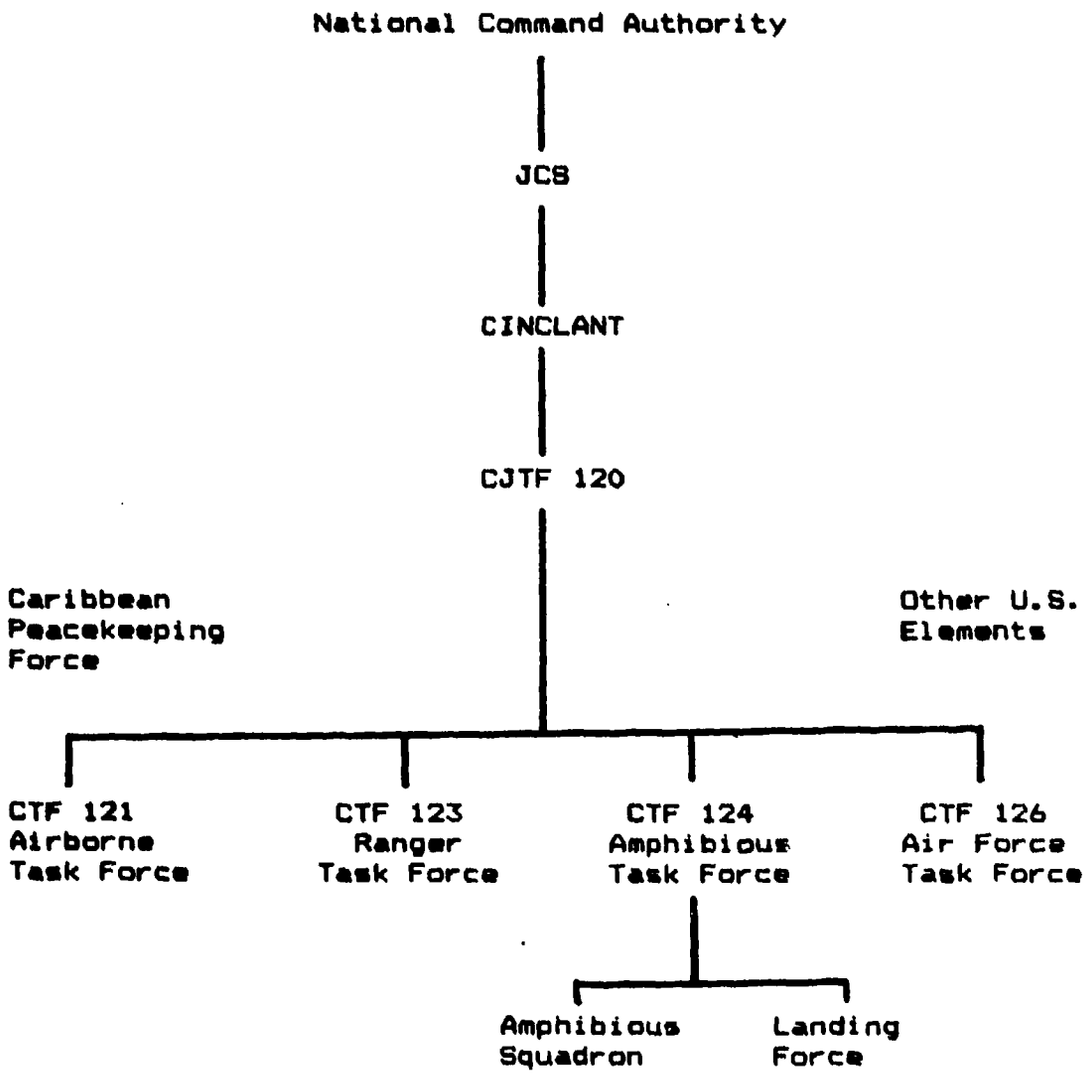
APPENDIX A

COMMAND AND CONTROL ORGANIZATION, FALKLANDS



APPENDIX B

COMMAND AND CONTROL ORGANIZATION, GRENADA

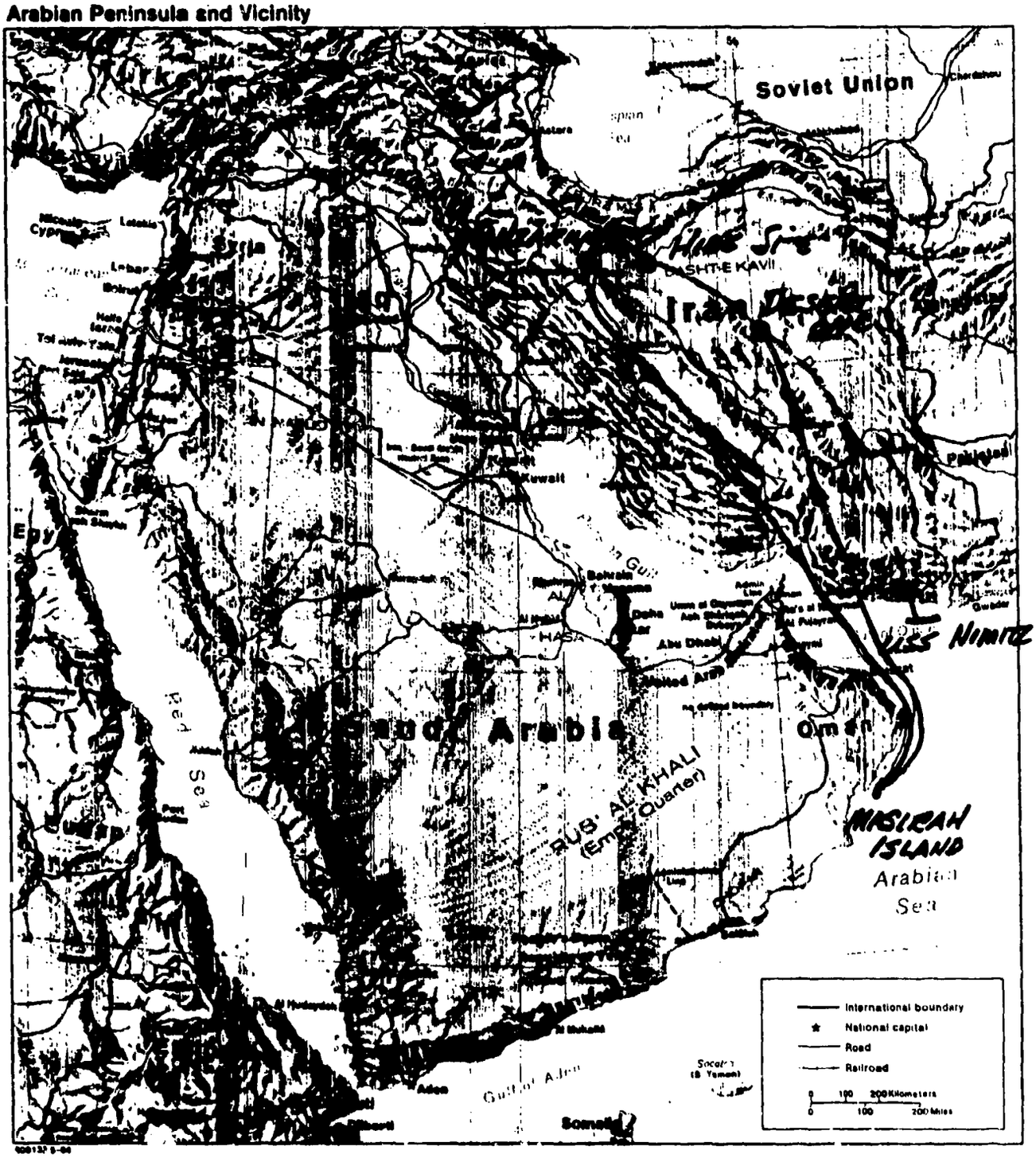


Metcalf, VAdm Joseph (USN), "Decision Making and the Grenada Rescue Operation," in Ambiguity and Command, p.280.

APPENDIX C

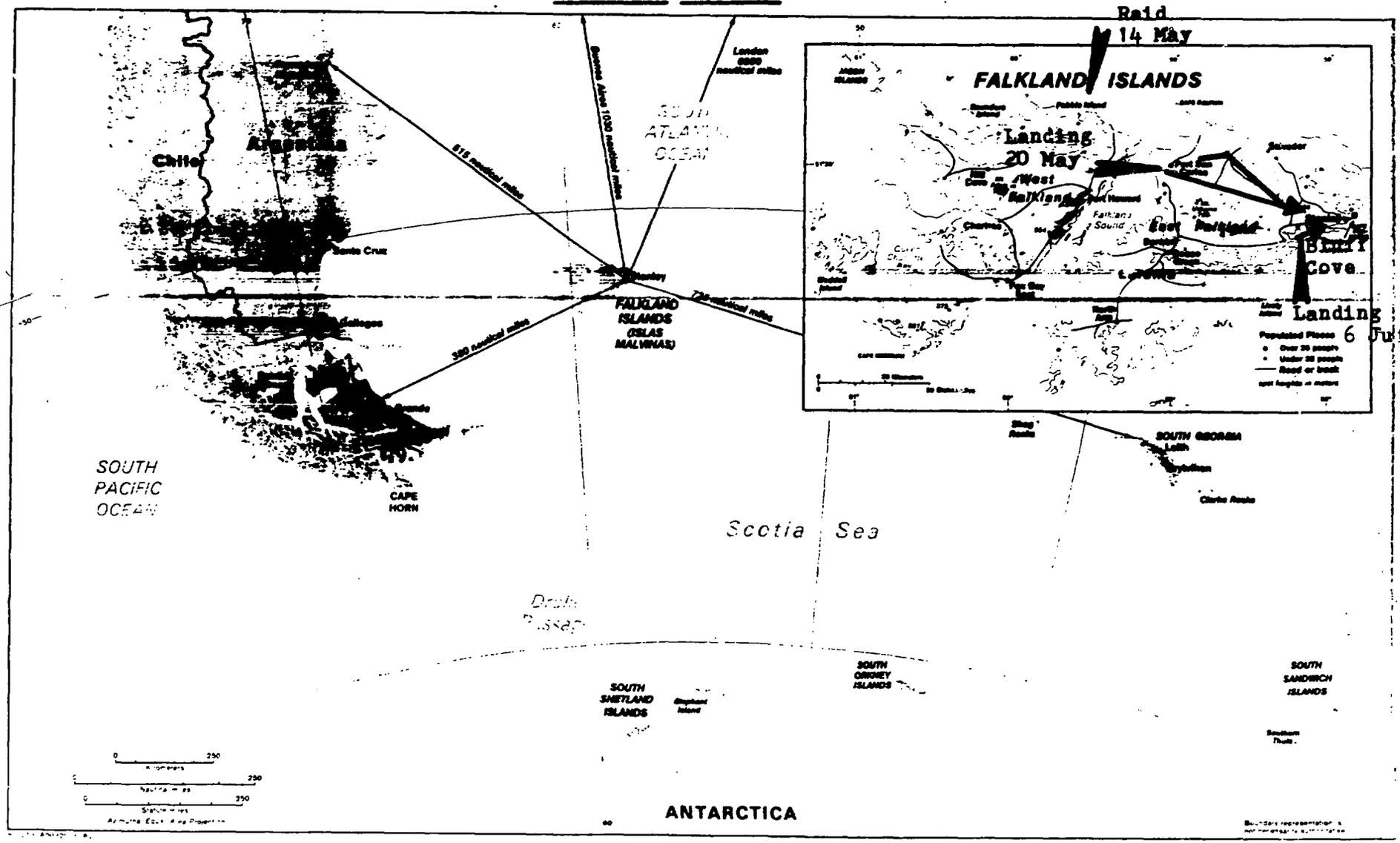
IRANIAN RESCUE ATTEMPT

Arabian Peninsula and Vicinity



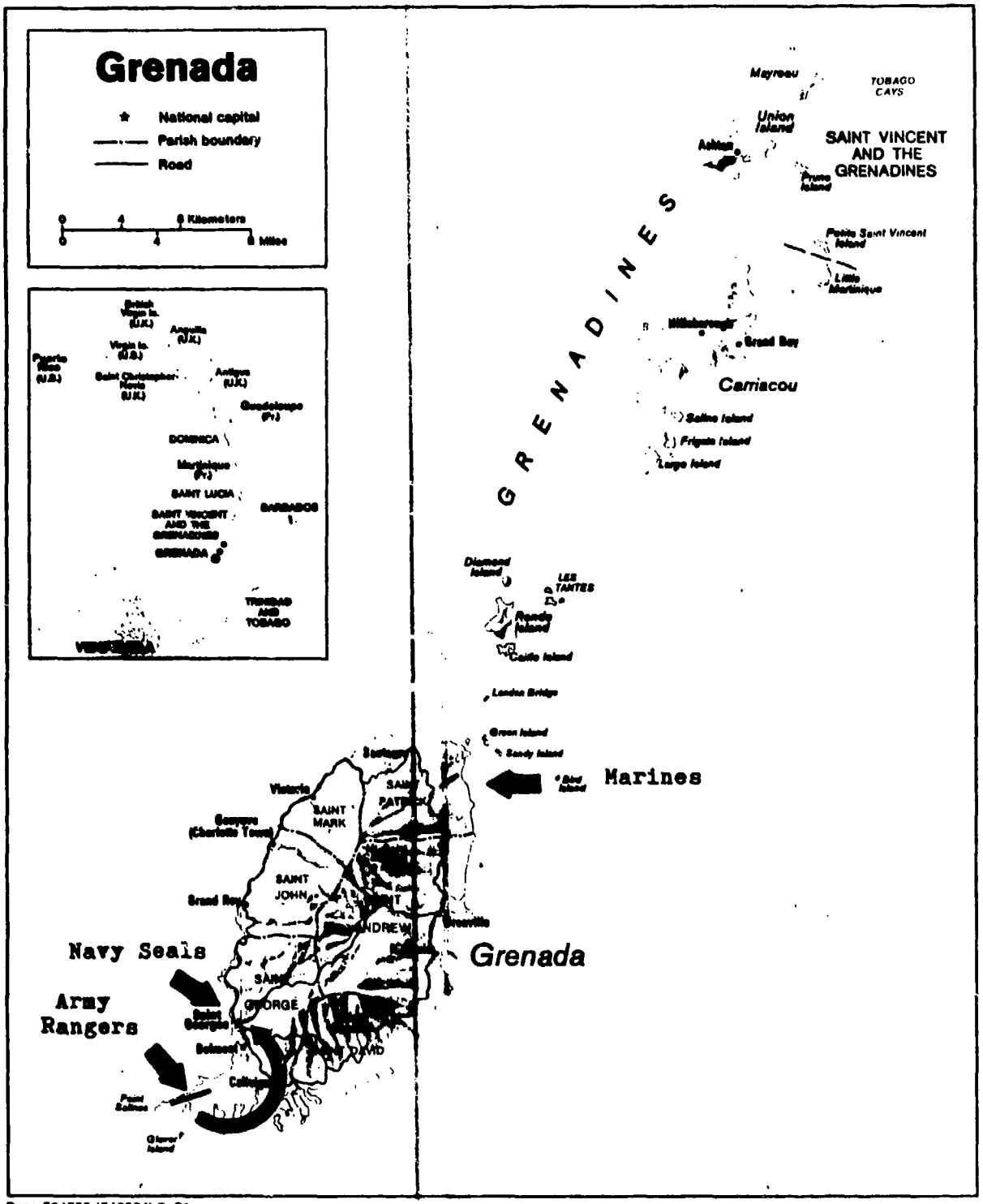
APPENDIX D

FALKLANDS CONFLICT



APPENDIX E

GRENADA INVASION



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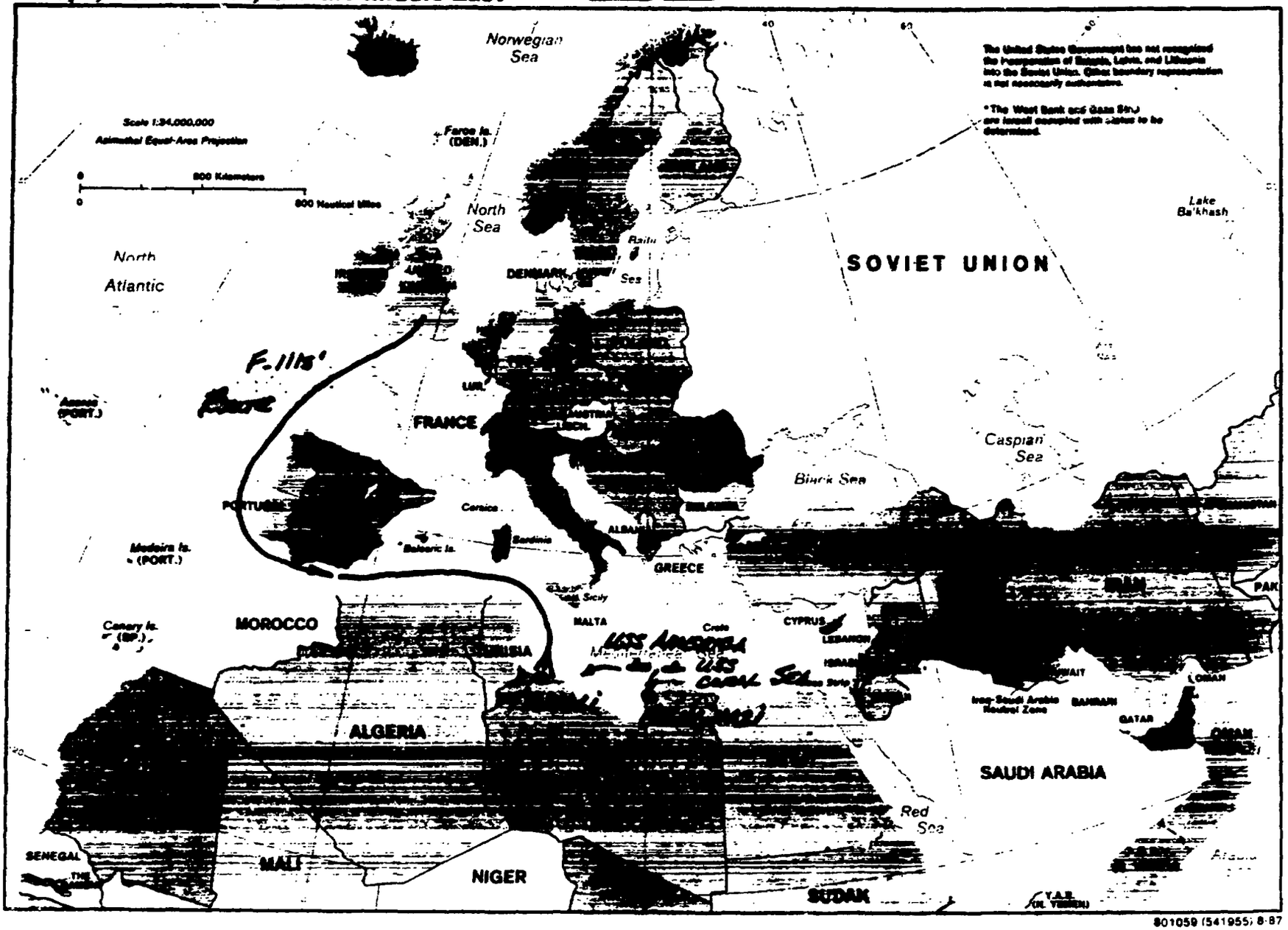
APPENDIX F

LIBYA RAID



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GLOSSARY

A-6	A United States Navy attack aircraft
A-7	A subsonic, close air support and interdiction aircraft
AFB	Air Force Base
a.m.	Ante Meridiem
AU	Air University
C-130	Intratheater airlift aircraft
C-141	Intertheater airlift aircraft
C3	Command, Control, and Communications
C3I	Command, Control, Communications, and Intelligence
CAS	Crisis Action System
C-in-C	Commander-in Chief
CINCLANT	Commander-in-Chief, Atlantic
CINCUSAFE	Commander-in-Chief, United States Air Forces, Europe
Col	Colonel
COMJTF	Commander, Joint Task Force (also written as CJTF)
Cong.	A notation for congress
Crypto	Cryptologic/Cryptological
CTF	Commander, Task Force
D.C.	District of Columbia
DO	Director of Operations
DoD	Department of Defense
DSCS	Defense Satellite Communications System
E-2C	A United States Navy surveillance, warning, and control aircraft

E-3 AWACS	A Boeing 707 aircraft configured for airborne surveillance and command, control, and communications. AWACS--Airborne Warning and Control System
EA-6	A United States Navy A-6 aircraft equipped for an electronics suppression mission
EC-130	C-130 intratheater airlift aircraft equipped for electronic missions
ECM	Electronic Countermeasures
ed.	A notation meaning edition, edited by, or editor depending on the usage
EF-111	An F-111 aircraft equipped for an electronics suppression mission
EST	Eastern Standard Time
etc	et cetera
EUCOM	European Command
F-14	A United States Navy long-range fighter aircraft
F/A-18	A United States Navy fighter/attack aircraft
F-111	Long-range, interdiction/fighter aircraft
FB-111	A medium-range, strategic bomber version of the F-111 aircraft
HF	High Frequency
HMS	Her Majesty's Ship
HQ	Headquarters
Ibid.	An abbreviation of the Latin word *ibidem*, meaning "in the place of." Used in the notes section to show that the previous reference has been repeated in whole or in part.
IITS	Intertheater Imagery Transmission System
Inc.	Incorporated
JCS	Joint Chiefs of Staff
JOPS	Joint Operational Planning System

JTF	Joint Task Force
KC-10	A strategic tanker/cargo aircraft
KC-135	A strategic aerial refueling aircraft
Lt Col	Lieutenant Colonel (also written LTC)
Lt Gen	Leiutenant General
M.A.	Massachusetts
Maj	Major
MARISAT	Maritime Satellite (communications system)
MC-130	C-130 intratheater airlift aircraft equipped for special operations missions.
MG	Major General
MOP	Military Operating Procedure
N.C.	North Carolina
n.d.	A notation to show that a publication is undated
n.p.	A notation for the absence of a publisher or a place of publication
OPSEC	Operations Security
P.A.	Pennsylvania
p.m.	Post Meridiem
pp.	A notation referring to pages numbers (singular form is p.)
RAdm	Rear Admiral
RH-53D	United States Navy configuration of the HH-53 heavy-lift helicopter
R.I.	Rhode Island
RN	Royal Navy
SAC	Strategic Air Command
SAR	Search and Rescue
SATCOM	Satellite Communicat' (s)

sess.	A notation for a session of congress
SITREP	Situation Report
St.	Saint
STOL	Short Take-Off/Landing
s.v.	A notation meaning to refer to the words that follow
UHF	Ultra High Frequency
UK	United Kingdom
U.N.	United Nations
US	United States (also written U.S.)
USA	United States Army
USAF	United States Air Force
USAFE	United States Air Forces, Europe
USMC	United States Marine Corps
USN	United States Navy
USS	United States Ship (also written U.S.S.)
V.A.	Virginia (also written Va. and VA)
VHF	Very High Frequency
VLF	Very Low Frequency